Australian Education Review

Literacy Education in School

Research perspectives from the past, for the future

Peter Freebody

Australian Council *for* Educational Research

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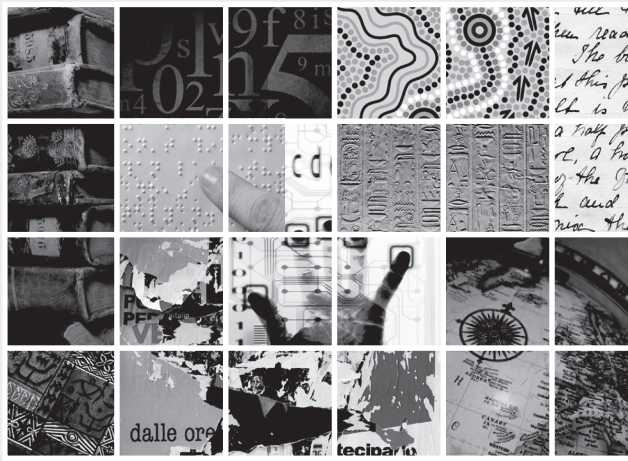

Foreword

Literacy education is frequently discussed in the context of a crisis. Student literacy levels are claimed to be in decline or at least inadequate for contemporary society. The evidence advanced is typically anecdotal – based on instances of poor grammar, spelling or expression or on a comparison with a recalled 'superior past'. This debate about 'literacy standards' is sometimes further sharpened by a sense of urgency about the competitiveness of the labour market within Australia and its responsiveness to individuals' skills and the international competitiveness unleashed by globalisation.

The empirical evidence from international comparisons is much more encouraging. In its Programme for International Student Assessment (PISA), the Organisation for Economic Co-operation and Development (OECD) surveys the performance of 15-year-olds in school in a growing range of countries on a three-yearly cycle that commenced in 2000.

In PISA 2000, when reading literacy was the main domain of assessment, Australian students ranked in second place behind Finland, tied with eight other countries from which its results were not significantly different and significantly ahead of the remaining 32 countries (OECD, 2003, p.76). In PISA 2003, Australia again ranked second in reading literacy behind Finland, this time tied with five others and significantly ahead of the remaining 33 (OECD, 2004, p.281). Results from PISA 2006 will be published in December 2007.

Given that Australian students perform so well in the international comparisons, one might ask why they are so frequently claimed, in domestic debate about education, to be performing so poorly. In this volume, Freebody's explanation is that:

> *Literacy education has become the scapegoat of choice for the economic, social, moral and intellectual fragilities and failings of our society, or at least its immediately impending fragilities and failings, or, at the very least, the fragilities and failings of some groups within the society (p.70).*

There is no doubt about the centrality of literacy to education and to adult life in a literacy-saturated and literacy-dependent society like Australia. Its accepted importance for all developed countries is indicated by the centrality it has acquired in the international comparisons adopted by the OECD member countries, together with mathematics and science. The growing participation in the OECD assessment program, with 28 non-OECD participants joining the 30 OECD members in PISA 2006, establishes the breadth of interest in literacy (and in the outcomes for policy in the resultant international comparisons).

The Nature of Literacy

The crucial questions in this field are about the nature of literacy and the means by which its development is best facilitated in schools. In this review Freebody makes a substantial contribution by setting both questions in a historical context, by clearly and helpfully delineating different aspects of literacy and by elegantly summarising the research evidence.

The history is valuable throughout. It adds a perspective on the development of language and writing that helpfully informs the discussion on reading and the acquisition of reading literacy. It also offers the prospect of research becoming more cumulative by showing how ahistorical much of the research to date has been.

The discussion of the nature of literacy restores a complexity that is often lost in a public debate that seeks simple solutions and ends up with simplistic ones. Freebody describes the nature of grapheme-phoneme correspondence (GPC) in English, offering informative comparisons with those in other languages. He illustrates how the complexity of the correspondences in English is related, in part, to the way in which English developed by borrowing heavily from a range of other languages, discusses how the correspondences are learned and then describes how much more is involved in developing literacy than learning grapheme-phoneme correspondences. He concludes:

> *Fluency with the particular GPC of English and understanding everyday texts are necessary parts of the development of the powerful literacy capabilities that contemporary schooling call for, and are necessary precursors to a generative process whereby individuals and collectives can actively and effectively participate in domestic, civil and vocational life. These aspects of GPC do not, however, add up to a sufficient platform for literacy activity in school and out of school life (p.67).*

This broader view of reading literacy underpins the assessments in OECD's PISA.

> *Reading literacy is defined in PISA as the ability to understand, use and reflect on written texts in order to achieve one's goals, to develop one's knowledge and potential, and to participate effectively in society. This definition goes beyond the notion that reading literacy means decoding written material and literal comprehension. … The focus of PISA is on "reading to learn" not "learning to read". Students…are expected to demonstrate their proficiency in* retrieving *information,* understanding *texts at a general level,* interpreting *them,* reflecting *on the content and form of texts in relation to their own knowledge of the world, and* evaluating *and* arguing *their point of view (OECD, 2001, pp.21–22).*

PISA 2000 reported both overall reading literacy scores and scores on three subscales that reflect this view, viz. 'retrieving information, interpreting texts, and reflection and evaluation'. Australian 15-year-olds were tied in second place on all three subscales, as they were on the overall reading literacy score, behind Finland on the first two subscales but behind Canada and not different from Finland on the third (OECD, 2001, pp. 250–252).

Some of the PISA reading tasks involve graphical displays, not just continuous prose (e.g. OECD, 2001, p.40). Freebody offers brief excursions into writing and into reading of material that is more than textual, including material that is accessed electronically (pp.51–54). These considerations serve to expand the reader's horizons without losing the primary focus on reading of printed text.

Literacy and equity

Freebody offers some very helpful comments on the issue of equity in the teaching of reading. He notes that there is a 'strong correlation between material affluence and aspects of … literacy, and especially in printed English', but deplores the tendency of researchers and policy makers 'to sheet home the basic explanation for disadvantaging practices to the family, essentially the parents' (p.24). He makes the very important point that well-intentioned school practices can create, or at least reinforce, this relationship, reporting that:

> *the more 'relevant' the official curricular or commercial materials of early literacy education, the more they take a stand on the everyday lives of 'the child' … [and] the more they form part of an invisible set of disadvantaging and culturally disenfranchising processes (p.25).*

Freebody suggests that the relationship between social background and school achievement (literacy in this case) seems 'not to change a great deal over time or across locales (p.23). Whilst the bulk of literacy achievement research supports this, the PISA results are more encouraging, in that they indicate that it need not be the case. These results do show there is a positive 'social gradient' linking more advantaged social background with generally higher reading literacy levels in all countries, but they also show that the gradients differ remarkably across countries. Canada, Korea, Japan and Finland all have gradients significantly less steep than that for the OECD as a whole. By comparison, those for Australia, the United Kingdom, the United States and Germany have gradients significantly steeper than that for the OECD as a whole (OECD, 2001, p.308). The steeper the gradient the less equitable the results, since the steeper the gradient the more additional social advantage is associated with better educational achievement.

Freebody is right to claim that there is a strong relationship between material affluence (or level of social advantage) and educational achievement but the PISA results clearly indicate it is wrong to claim, as so much of the research has, that it is little different over locales or that improvement could not be effected over time. The fact that the social gradient for reading literacy is less steep in Korea and Japan than the OECD average may be due to the nature of the script to be read; while for Finland it could be due to Finnish having much more consistent grapheme-phoneme mapping than in other alphabetical languages such as English. The fact that Canada produces more equitable outcomes than Australia and many other countries currently do, however, suggests that things need not be as they are in Australia.

As Freebody argues in Section 2 of the review, shifting the steepness of the social gradient is the proper focus of classroom practice and thus of literacy research. And in Section 4 he provides a well-argued set of research-based propositions as to how these inequities can be identified and addressed: by policies which relate to curriculum change and classroom practice.

Freebody's review of research on literacy teaching and learning is powerful and revealing. He shows that many research studies are trapped by a narrow view of literacy, reporting that:

> *Many of the studies encountered while reading for this review are conceptually trite, repetitive, to all intents and purposes, of earlier studies, or so limited in their theoretical scope and practical benefits that they yield little for educators working with a concept of literacy beyond letter or word reading (p.45).*

Classroom realities

Freebody's most telling critique is that much of the research takes no account of the realities of classroom teaching and learning. He sets demanding criteria for research and shows examples of work, including his own, that satisfy them. He points to:

> *the need for researchers with a general interest in literacy to base their theories and empirical interventions on an adequate description of the materials and activities that are found in contemporary educational settings (p.52).*

Freebody declares that his 'review aims to expand our understanding of the nature of literacy in a selection of the theoretical, historical and school-based empirical research literature' (p.4). He certainly succeeds. He has produced an outstanding review that will be extremely helpful both for experts in literacy and also for those with a more general interest.

Barry McGaw

Professor Barry McGaw is Director, Melbourne Education Research Institute, University of Melbourne and previously Director for Education, Organisation for Economic Co-operation and Development (OECD) and Executive Director of the Australian Council for Educational Research (ACER). His career work has been characterised by his interest in quality and equity in education systems and schools and in strategies for developing social capital through education.

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Contents

section 1

Concepts of literacy education

Concepts lead us to make investigations, are the expression of our interest, and direct our interest.

(Ludwig Wittgenstein, *Philosophical Investigations*, 1958, Section 570)

Introduction

Literacy education is a maverick concept. Its refusal to be corralled is testament to the many different interests expressed and directed under its name. Reviews of the research on literacy education are likely to begin with displays of consternation at the sheer bulk and diversity of published work. Such displays are more than rituals; reviews have a tendency to turn into position papers.

In the Australian setting, expressions of alarm at the bulk and diversity of research on literacy education are accompanied by two distinct undercurrents: the first is the distinctive linguistic heritages of contemporary Australia, and the second is the notable contribution of Australian scholars to theory, research and debate on literacy education.

It is now common practice to acknowledge Indigenous custodianship of Australian land, but there has been almost no acknowledgement of the Indigenous Australian heritage of language and literacy practices. In terms of our interests in this review, almost none of the research done on literacy education has been conducted using written or otherwise inscribed forms of Indigenous Australian languages[1], of which there are estimated to have been about 240 at the time of European settlement (Schmidt, 1990). Studies of their patterns of sound–symbol correspondences, grammatical formations, genre repertoires, and the cultural functions of spoken, iconic and pictorial texts in these language groups, where they have occurred, have typically been the pursuits of cultural and linguistic anthropologists and have left little trace on Australian theoretical or empirical explorations of literacy or the teaching and learning of reading and writing.

[1] There are some isolated and usually uncoordinated instances whereby written materials developed in home languages are used to teach reading and writing to Indigenous Australian students, but this process is almost always regarded either as a 'gateway' to English literacy or as a temporary intervention to enhance local cultural pride (McHugh & Konigsberg, 2004; Tamisari & Milmilany, 2003; Zeegers, Muir, & Lin, 2003).

This silence is a symptom of a particular history of educational practices and policies that is perpetuated with each successive generation of literacy educators, scholars, and researchers (a point illustrated in the case of North American Heritage languages by Tse, 2001). The cumulative effects have been cataclysmic on the durability of Indigenous Australian languages, many of which are no longer used, many of which might not be used for much longer (McConvell & Thieberger, 2001), and none of which are found anywhere else.

In light of this history, the reader may well anticipate that this review will deal only with the English language in print, as indeed, for the most part, it will. That assumption, however, merely speaks to how complete has been our identification of literate Australian language with printed English. This completeness has been brought about partly by the effort put into institutionalising literacy education in this country, and into instating a particular form of literacy education as the touchstone of access to worthwhile curricular knowledge. This generally well intentioned effort has not only had practical and ideological consequences (Pennycook, 2007); it has also set limits on our imaginative engagement with the notion of literacy education, marking out the confines of our conceptual dealings with the nature of literacy, its purposes, its significance for societies, and how it can be passed from generation to generation. Considering Figure 1 brings us into closer contact with those confines.

Figure 1: Robert Barton's painting – My Mother's Country

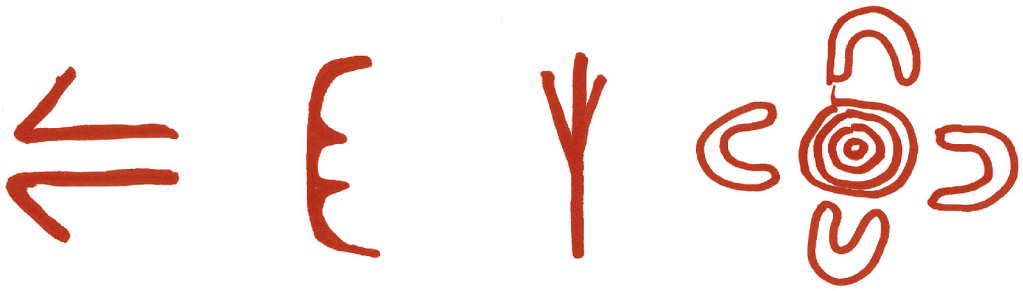
The artist's annotations to the painting are:

> *This artwork tells the story of my mother's country and specifically the story of the Emu and Kangaroo. The narrative recounts the dreaming story of Kalkadungu people, whose ancestral lands are found in far North Western Queensland and who are revered as one of the country's fiercest warring tribes.*
>
> *The story is of the Emu and Kangaroo and how the Kangaroo got its red coat. There are many campsites and other special places depicted in the painting.*
>
> *There is, of course, a more detailed narrative that connects all of these different elements.*

(Robert Barton, 2001)

Figure 2 is a selection of iconography explaining some of the textual parts of the painting.

Figure 2: Selection of icons used in Figure 1



Kangaroo Dingo Emu Women at campsite

(Robert Barton © 2001)

The artist's annotations suggest that there is much to be said about Figure 1 as art, and about Figure 2 as text. Here it is sufficient to note, as the artist recognises, that the piece needs to be decoded according to 'non-natural' means; that is by using cultural rather than simply 'natural' visual resources. What that implies is that coming to understand this artefact as a text is coming to acknowledge its significance as language, text and culture, and recognise the need to develop the capabilities to decode and use its narrative and emotional structures as frames for connecting personal and communal activities, histories and identities. Pedagogical effort needs to be expended with young Kalkadungu learners in regard to each of these developments so that they can read and understand, and, in particular, so that they can read and understand in the ways that Kalkadungu people read and understand. We can view all of this as adding up to a program in literacy education whose elements combine to give us a glimpse of the ways in which this object is a 'meaningful text' to the Kalkadungu people. Generationally, the people shape the text just as the text shapes the people.

Even such a light consideration as this should cause us to reflect next time we hear Indigenous Australian cultures characterised as 'non-literate' or 'illiterate' or 'purely oral cultures'. We are also reminded that what passes for effective literacy education can differ depending on the culture, history and technologies of social groups, and that our centuries-long focus on teaching and researching English in print, however rich and challenging that project has been, represents only one possible scholarly tradition[2]. Moreover, it is a tradition that has suited and advanced the interests of some groups over others. As Levinson (2007) concluded from his extensive study of the often hostile attitudes toward formal, school-based literacy education among English Gypsies, even a glimpse of the usually invisible knowledge, understandings and practices of such communities can lead us to 'speculate as to the alternative literacies that we have all forfeited' (p. 33).

The second undercurrent to an Australian account of literacy education is that Australian researchers have contributed significantly to research efforts in literacy education from a striking variety of perspectives and with an international pre-eminence not consistently enjoyed by their compatriots working in other areas of educational inquiry. The volume and productivity of that body of work are notable, along with its influence on teachers, researchers and policy makers in other parts of the world. (Freebody and Gilbert (1999) described Australian contributions to this corpus of work for the period 1969–98.) Among other things, the Australian work on literacy education has been characterised by cross-disciplinary contact, an abiding interest in the relationships between literacy education and equity, and remarkable levels of professional and public disputation. These themes have continued to agitate an already abundant and turbulent area.

[2] The capacity of new digital technologies to deliver powerful learning experiences have stimulated researchers and policy makers in literacy education to pay serious attention to multimodal forms of literate communication, the irony of which has not escaped many Indigenous educators (Brocklebank, 2002).

Structure and aims of this review

This introductory section describes the turbulence in the midst of which research on literacy education takes place, first in terms of the bulk of the corpus of work that needs to be acknowledged, and second in terms of the varying definitions encountered in the field.

This review is guided by the view that *literacy education* is a term that covers activities in the world, and that the purchase or otherwise of various theories about literacy needs to be considered in terms of how a theory can bring into better focus the structures of practical activities in classrooms and other literacy learning sites.

The review aims to expand our understanding of the nature of literacy in a selection of the theoretical, historical and school-based empirical research literature. There is a noun 'literacy', and a sense among people with well developed literacy resources that, experientially, *literacy* relates to a single process. But, for educators, the term *literacy* has long been regarded as referring to sets of coordinated resources and knowledge about these resources. That is, the apparent seamlessness of literacy practices among mature practitioners should not obscure the pedagogical imperative to analyse those distinct elements that come to be orchestrated in mature practice – to analyse them separately, as well as how they become orchestrated in literacy activities.

An additional aim is to present a convincing case that the study of literacy education should draw our theoretical and empirical attention to the actual sites of educational practice and policy as an accompaniment to the burgeoning body of experimental research on reading acquisition.

The sheer volume

Like many contemporary societies, Australia is both literacy-saturated and literacy-dependent. The first is obvious; the extent of the second less so. Heavy domestic, civic and vocational duties are performed via reading and writing, and so reading and writing have traditionally been at the core of schooling. In a period of dynamic social and cultural change and diversity, being schooled in literacy, one way or another, is something lots of people have in common. We feel that we already know about it so well that mismatches in our definitions come to the fore only when we surprise one another with wildly differing recommendations for its improvement.

So, at least with reference to printed English, the teaching and learning of reading, writing and literacy are topics that together probably account for one of the largest and most diverse bodies of research in all of the social and behavioural sciences. The daunting body of research relevant to the teaching and learning of literacy has been under construction for many decades and has attracted the contributions of scholars from the widest imaginable range of discipline bases.

This body of research has a considerable history. For instance, Edmund Burke Huey was the first US psychologist to summarise systematically the growing corpus of research on literacy education. He drew together scores of studies of orthography, learning and classroom life in the early twentieth century to marshal an argument for reforming the teaching and learning of reading in schools. Reading Huey's encyclopedic *The Psychology and Pedagogy of Reading* (1908) in the twenty-first century we come to realise how some of his central interests are directly parallelled in many contemporary community, media, professional and academic debates about reading and writing. These include phonics versus meaning emphases; using the learner's world knowledge; reading as natural versus reading as a cultural artefact; learning techniques versus learning cultural values. So current do the themes developed by Huey seem that, in his introduction to a reprinted version of Huey's book 60 years after the original, psychologist Paul Kolers commented that 'remarkably little empirical information has been added to what Huey knew, although some of the phenomena have now been measured more precisely' (p. xiv).

Huey also drew on earlier compilations of the research on the psychology and physiology of eye movements (Dearborn, 1906; Quantz, 1897), a body of work to which he himself had contributed. His innovation, however, was to apply those bodies of research, and others relating to pedagogy and print, to both the nature and teaching of reading. For instance, Huey was sharply

aware that the task of thinking about reading and writing was also the task of understanding the culture and the individual's engagement with the culture. He did not regard learning to read as independent of the materials that were to be read, or of the culturally important ways of thinking and acting. He stressed reading as a form of moral formation and regulation. Like many of his American contemporaries, he believed that the study of reading was properly an inquiry into the values and ways of a culture:

> *the pupil should be practiced in grasping the essential meanings, in selecting and gathering from books and papers what they have for his [sic] purposes, in ignoring the irrelevant, and in feeling values always ... to impregnate the souls with the race's highest ideals and tastes.*

(Huey, 1908, p. 382)

Even considered a hundred years later, Huey's work is a rich compendium of ideas, research and recommendations about the teaching and learning of reading and writing. It was so rich that it generated plenty of questionable interpretations in the decades that followed its publication. But one feature of the work that is most notable is Huey's belief in the value of observational work on everyday reading and writing practices as a means of scrutinising the received and misguided 'wisdoms' that he saw guiding much educational practice. When it came to the need to consider literacy as socially relevant practices as compared to the irrelevance of many teaching routines, Huey was blunt. He described the school subject Reading as 'an old curiosity shop of absurd practices'; he observed that teachers had made a 'fetich' [sic] of the 'unreasoned and unreasonable A-B-C method'; and he characterised the teaching techniques that accompany 'reading done for its own sake' as 'mannerisms and debris' (pp. 9–10).

Huey's frustration with the teaching of reading in school was offset by his belief in the role of government-controlled schools, and their potential for large-scale, centrally monitored reform. He concluded his book with a display of optimism on the matter of the then newly mandated institution of compulsory schooling and its ability to allow governments to control literacy education:

> *the possibilities of controlling conditions as to reading and even printing, through the government supervision of the practice of the schools, gives promise of early improvement in conditions when once the specialists have reached final conclusions.*

(Huey, 1908, pp. 430–431)

The specialists will, apparently, be withholding their final conclusions for a while yet, but Huey's definitions of the nature and significance of literacy set out the parameters for many of the research programs and professional debates that have recurred in the 100 years since his work. Equally prominent is Huey's struggle with many intersecting discourses and his unwavering faith in a growing base of research to solve the problems those debates raise.

It would be close to impossible to estimate accurately the number of research projects relating to literacy education conducted since Huey's compiled his collection. For example, considering only the psychologically oriented research carefully selected for inclusion in recent major US reviews, we find many hundreds of studies. These reviews include:

- Jeannie Chall's ground-breaking *Learning to Read: The Great Debate* (1967) surveyed scores of studies conducted for the most part in the 1960s.
- Marilyn Adams, in *Learning to Read: Thinking and Learning about Print*, drew on more than 600 research papers in conducting her 1990 review of the 'meaning-based' versus 'skills-based' debate in reading education (1990a).
- The Center for the Study of Reading, a collaboration between the University of Illinois and the research company Bolt, Beranek and Newman, and funded by the US Institute of Education from the mid-1970s till the late 1980s, is still in operation and had, at last count, published research reports numbering close to 700.

- The University of Michigan's federally funded Center for the Improvement of Early Reading Achievement, and the University of Pittsburgh's Learning, Research and Development Center have together published some hundreds of research pieces on aspects of literacy education.
- The US National Reading Panel (2000) drew on a review by Snow, Burns and Griffin (*Preventing Reading Difficulties in Young Children*, 1998) that, even with debatably constrained criteria for inclusion, incorporated many hundreds of research contributions.

The volume is imposing even before we count the many studies conducted in other places around the world and in other languages, and the even larger number drawing on traditions other than psychology.

Predictably, the teaching of reading and writing has also been a focal point for professional, community and media stoushes of remarkable heat and longevity. The levels of anxiety, frustration and dismissiveness regularly displayed in these debates make it clear that more is at stake than merely the technical aspects of teaching and learning to read and write, or the status of literacy capabilities in school curriculum. Clearly literacy signals some primordial set of competencies and dispositions that distinguishes it from other aspects of schooling and education more broadly. Whatever a 'history crisis' or a 'geography crisis' or a 'physics crisis' might look like, or however 'in crisis' educators in these or other areas of teaching and learning may actually feel, it is hard to imagine them capturing a share of professional debate or media headlines comparable to literacy's.

The definitional difficulties

It is a commonplace to observe that definitions of literacy have changed over time. There are two general aspects to this observation. The first is the sense that people, or at least proportionately more people, could get by in past centuries or even decades with less developed literacy capabilities (Kaestle, 1991). That is, there is a sense in which more aspects of life have become literacy-dependent, and, moreover, that we need more complex and sophisticated literacy capabilities. Resnick and Resnick, in a comment even more relevant 30 years after they made it, drew a blunt conclusion from their extensive study of the history of reading and literacy education concerning the 'back-to-basics' instinct evident in some literacy debates:

> *there is little to go back to in terms of pedagogical method, curriculum, or school organization. The old tried and true approaches, which nostalgia prompts us to believe might solve current problems, were designed neither to achieve the literacy standard sought today, nor to assure successful literacy for everyone.*

(Resnick & Resnick, 1977, p. 385)

The second aspect of this definitional issue is that the significance of literacy capabilities has changed along with changing social, economic and cultural conditions. There has long been a sense that literacy carries with it a sense of awareness of issues beyond the immediate daily contingencies of the tribe or the neighbourhood. It has been taken to signify a mentality that can 'hear' beyond the reach of the human voice. Harris (1989), for instance, has shown how the ancient Romans used the term *litteratus* to signify cultivation, the awareness of the situation beyond one's immediate surroundings, and, more specifically, the key sign of these qualities, the ability to use the language of official art, literature and civic and imperial administration – Latin.

Definitions of literacy are complex, not only because they aim to describe a complex set of practices, but also because they are, to some significant extent, context-driven. They are tailored to particular features of the script of a language, and the educational, institutional and cultural contexts in which they need to be put to work. Definitions of literacy practices are both expressions of social and cultural histories and projections of preferred futures.

To illustrate the various categories of approaches to defining literacy, we can take UNESCO's view in 1957 that an 'illiterate person' is someone 'who cannot with understanding both read and write a short simple statement ('exposé', in the original French) on his [sic] everyday life' (cited in Harris, 1989, from UNESCO, 1977). Note that the beginning point is in fact the absence of the phenomenon at hand (i.e. literacy) that is explained. In fact, what is defined is 'illiteracy'. This tendency to define literacy by its absence had generally changed by the time UNESCO mounted its *Experimental World Literacy Program* (EWLP) in the mid-1970s. The definition guiding that program was:

> *A person is literate when he* [sic] *has acquired the essential knowledge and skills which enable him to engage in all those activities in which literacy is required for effective functioning in his group and community, and whose attainments in reading, writing and arithmetic make it possible for him to continue to use these skills towards his own and the community's development.*

(cited in Oxenham, 1980, p. 87)

Baker and Street made the following comment on the outcomes of this definition:

> *In practice this apparently relativistic and functional definition of literacy has been largely associated with narrowly-defined programmes with work-related objectives, concerned with improvements in labour productivity ... Ideologically specific objectives had been disguised behind a supposedly neutral model of literacy as simply technical skills.*

(Baker & Street, 1991, p. 2)

A former Director of the Literacy Secretariat of UNESCO made this comment on the fate of UNESCO's definition and the EWLP:

> *While UNESCO had promoted what it called the 'mass literacy campaign' approach in its early years, it turned to a more targeted strategy, called 'functional literacy' programmes in the mid-1960s and early 1970s. When learners in these latter programmes discovered that the only 'functionality' involved was to make them better workers, the majority of these experiments failed … Programmes and strategies must emanate from perceived needs within individuals and their communities.*

(Limage, 1993, p. 23)

One clear implication is that definitions of literacy can be highly consequential for practice and policy. A second implication could have been predicted by Huey. The UNESCO program was undertaken with predetermined ideas about how literacy improvement would affect people's lives (in particular, that it would affect their working lives) and how those benefits would translate into productivity, efficiency and so on. As Gowen (1992, 2001) has shown, the success of literacy programs depends on a shared definition of the nature and value of literacy among participants on the site at hand – managers and workers, teachers and students.

Predictably, formal attempts to define literacy by researchers and educational agencies have varied substantially. In the sample of definitions presented in Figure 3 on page 8, the reader encounters 'literacy' used variously: in its absence, as an impediment to human communication, as a stimulus for new forms of individual and collective behaviour, as a quantifiable scale of reading and writing skills, as a set of unspecified knowledges and skills that enable 'developmental' community functioning, as a hierarchy of abilities, as a set of text-based psychological processes, and as a mixture of language and cognitive integrations in and around reading and writing.

Figure 3: Literacy definitions

This discovery of yours [writing] will produce forgetfulness in the minds of those who learn to use it ... they will trust to the external written characters and not use of their own memories; you give your students not truth, but only the appearance of truth; they will read many things and will have learned nothing; they will therefore seem to know many things, when they are, for the most part, ignorant and hard to get along with, having the show of wisdom without the reality ... You would imagine that [written words] had intelligence, but if you want to know anything and put a question to them, they always say one thing over and over. And all these words, once they are written down, are bandied about equally among those who understand and those who have no interest in them, and they do not know to whom to speak and not to speak; if they are mistreated or abused … they cannot defend themselves.

(Socrates in dialogue with Phaedrus, Sections 275e–277a, Plato, c365 BCE)

[L]iteracy is a characteristic acquired by individuals in varying degrees from just above none to an indeterminate upper level. Some individuals are more literate or less literate than others, but it is really not possible to speak of literate and illiterate persons as two distinct categories.

(UNESCO, 1957, p. 18)

My personal predilection is to accept the 1957 UNESCO statement, which describes literacy as a fuzzy continuum of abilities (and concepts dealing with literacy) which goes from zero to some undefined upper limit.

(Wagner, 1990, p. 6)

The concepts 'functional literacy' and 'functional illiteracy' were introduced to distinguish the higher-order level of abilities that separates those who are barely able to read and write ('basic illiterates') from those who are able to use their skills to function fully in the workplace, the community, and at home ('functional literates').

(Center for Educational Research and Innovation, OECD, 1992, p. 18)

At some point in the evolution of writing systems, writing came to preserve and thereby fix verbal forms across space and through time. The magic of writing arises not so much from the fact that writing serves as a new mnemonic device, an aid to memory, as from the fact that ... writing not only helps us remember what was thought and said but also invites us to see what was thought and said in a new way ... there is more to literacy than the ability to decode words and sentences. Capturing that 'more' is the problem ... it is the ability to step into, and on occasion step out again, from this new world, the world on paper.

(Olson, 1994, p. xv–xvi)

The problem of literacy is thus partly one of technical skill and the popular acquaintance with what can be done with an alphabet. It is also one of education and includes a commitment of traditions to writing ... Literacy in any society is not just a matter of who could read and write, but one of how their skills function, and of the adjustments – mental, emotional, intellectual, physical, and technological – necessary to accommodate it.

(McKitterick, 1990, p. 4)

Effective literacy is intrinsically purposeful, flexible and dynamic and involves the integration of speaking, listening and critical thinking with reading and writing.

(Department of Employment, Education and Training, Australian Language and Literacy Policy, 1991, p. 5)

Literacy is the flexible and sustainable mastery of a repertoire of practices with the texts of traditional and new communications technologies via spoken language, print, and multimedia. By 'flexible', we mean that students are able to adjust and modify their performance to better meet contextual demands and varying situations. By 'sustainable', we emphasise maintenance and achievement over time. 'Mastery' involves performance characterised by high achievement. A 'repertoire' involves sets of options for complex performance of literacy practices.

(Luke, Freebody & Land, 2001, p.9)

Definitions of literacy not only guide practice but are also guided by practice. The practical work in which education and training in literacy are implicated – in schools, clinics, homes, workplaces and so on – itself shapes the kind of phenomena that literacy and illiteracy are taken to be (Barton, 1994; Levine, 1985). These phenomena are reshaped not just to provide an object that can be theorised and documented for the various behavioural and social sciences, but also to provide a set of options for solving problems. Those options can thereby be addressed by social policies and improved via public provisions.

What has often preoccupied government and public policy has in fact been illiteracy and methods for its eradication, rather than the communicational challenges presented by a changing social, cultural and economic environment. This negative interpretation of 'literacy' has sometimes limited the kinds of literacy research that governments have been interested in funding, and thus, indirectly, the progression of certain ideas about literacy at the expense of others. In contrast, the challenge of enhancing a practical, actionable understanding of literacy as a productive, renewable individual and collective resource, and of methods for the improvement of teaching and learning are what confront educators and learners day to day.

Settling on a practical definition for this review

Literacy is taken here to be shorthand for an open-textured concept. It refers to how people use and produce symbolic materials fluently and effectively. It is also about how they put available technologies of production and dissemination to the practical ends of communicating productively, responsively and responsibly. The words 'fluently', 'productively', 'responsively', and 'responsibly' all point to the central idea that adequate literacy practices and the capabilities they imply are all socially endowed, and are deemed to be so or not, by the people around us, including by those with authority over our socialisation and education. To be literate varies with history and culture; it is to be literate in a given time and place, to be literate here and now.

So inquiring about what it means to be literate in developed, late-industrial, comprehensively institutionalised societies such as Australia is, therefore, asking questions about the actual and immanent symbolic communicational demands of that society, and about the implications of those demands for the social and moral organisation of the society. It means, for example, knowing how to use textual materials to represent individual or collective interests faithfully and cogently (a 'social' function); it means knowing when and how to mobilise the interests and actions of others (a 'sociological' function), as well as when and how to understand the role of textual communications in strengthening, or, as necessary, interrupting the processes by which individual and collective interests are joined (a 'socialisation'/ 'socialising' function).

So literacy refers to the orchestration in action of resources relating to the peculiarities of the demands at hand for:

- cracking the relationship between spoken and materialised language
- using and extending cultural knowledge to make texts meaningful
- drawing on, using and making a repertoire of texts that effectively advance the individual or collective purposes at hand
- interrogating texts for the ways in which they constrain interpretation, by excluding alternative ways of documenting experience of the world.

What this review is *not* about

With respect to defining the scope of this review, there is a set of topics with family resemblances to 'literacy education in and for school' that will not be dealt with, other than in passing, in the discussion that follows. The reason for this demarcation concerns the particular purposes of this review.

One of those purposes is to 're-historicise' inquiries into literacy education; that is, one central goal is to convey a sense that this topic has been a preoccupation of scholars and educators for a long time and across a wide range of disciplines, ideological positions and practical work

sites. The higher aspiration of that goal, in turn, is to allow readers to frame their encounters with current debates, disputes, crises and scandals about how to 'fix' literacy with a sense of the perennial themes and tensions that have shaped the field. A further goal is to inoculate ourselves professionally against the urge to accept quick and simple responses to complex challenges. In that spirit, the following topics will not be dealt with, either at all, or at least in any substantial and direct way, in the sections that follow.

Oral language skills

As seen from the list of definitions in Figure 3, it is not uncommon for speaking and listening to be included as components of literacy. There are some obvious ways in which this makes sense and some more compelling ways in which, for the practical purposes here, it does not. Clearly, instances of oral language use need to be 'decoded', and call on sense-making procedures that are also related to and productive of literacy learning. Also, literacy events in the world usually entail, are associated with, or are motivated by some oral language interaction. There is also research support for the view that oral language changes usage in ways that directly relate to growing mastery of literacy practices. (For an outline of this position see Olson, 1994 and 2003.)

The reasons for excluding oral language skills as *definitionally* relevant to literacy education relate simply to the use of words. It is clear that literacy events often have a lot of spoken language in them. A lecture, for instance, is typically made possible and purposeful by the reading and writing of printed materials. Even though there may be more speech than writing going on in any given literacy event, the structure and purposes of the event are not made distinctive or even possible by the speech, but rather by the possibility of its origins and its outcomes being written texts. Many events are 'secondary oral events' (Halliday, 1987; Ong, 1982; Rubin, 1980) whereby the language is actually drawn from a written text (directly as in news reading or indirectly as in lecturing from notes). For the purposes of this review, the interest is in the management, use, production, distribution and consequences of written and multimodal texts. Because a key focus here is on teaching and learning, attention will turn often to educational interactions around these textual materials.

Adult and workplace literacy education

Restricting the field to students in school does not reflect a lack of volume of work available on workplace literacy education, or the relative value of that work in developing our understanding of literacy education. It reflects the need to limit the scope not only of the empirical survey of work but also of the theoretical span of the inquiry. Adult literacy researchers draw on a range of theorisations that give weight to existing, often well-established bodies of knowledge, ideologies, dispositions and interests (Verhoeven, 1994), whereas it is in fact the establishment and development of these very resources that is part of what is at stake in the school literacy area.

Sensory, intellectual and specific literacy-related impairments

The question of who it is that requires 'special attention' in their literacy learning, and who requires merely 'better or more appropriate teaching' is one that has generated much heat in family, professional, research and policy contexts. It is a question that speaks partly to the differential allocation of time and material resources. Estimates vary wildly of the proportion of children in schools who can be clinically identified as needing qualitatively different teaching and learning conditions from those in which most children are expected to function. That aside, there is no doubt that some students experience sensory, cortical or psychological conditions that make it effectively impossible for them to learn in sites such as standard classrooms. There is an ongoing and urgent need for well theorised longitudinal research that aims to identify these students more effectively and help them develop literacy resources. 'Special education' and 'special needs education' are, therefore, now well developed specialisations, and have well developed traditions of theorising and doing research that lie outside inquiries into the nature of literacy in general. Ellis (2006) and Klenk and Kibby (2000) provide an introduction to

these traditions and the major findings and debates. Interpreting that body of research calls for specialised knowledge of the area; it is, therefore, a task beyond the scope of this review and the capabilities of this reviewer.

Assessing literacy

When the topic of literacy education appears, it has often arisen out of concerns about scores on national or international tests of reading and writing. Clearly, conclusions from such testing programs depend crucially on what kinds of assessments are used and how well it is judged that these assessments relate to the kinds of literacy capabilities called for in and out of school. An important source of contention is the extent to which literacy can be thought of as an entity distinct from its means of assessments, and contrariwise, the extent to which different kinds of assessment address different kinds of literacy capabilities. Matters (2007) has addressed many issues relating to the parameters that determine adequate assessment practices in education, and Freebody and Austin (1992) have summarised the outcomes of different formats for the assessment of reading and writing, but a comprehensive treatment of the assessment questions calls for discussion beyond the scope of this review.

Literacy, scandals, crises and wars

This review is not about whether there is a 'literacy crisis' in Australia or anywhere else, and not about what the research says about exposing the 'scandal' or fixing the 'crisis' (Freebody, 1998).

The motivation to advance research in literacy education arises first from our unsatisfactory understanding of its nature, development and consequences, and second from the substantial changes afoot in our society and globally. These changes are such that they reshape our communicational practices faster than they reshape both our educational practices and our theoretical appreciation of efficacy and equity in our teaching and learning.

Nonetheless, the regular appearance of literacy wars, skirmishes, or at least armed stand-offs, is itself an intriguing empirical 'fact' about literacy, so much so that regular readers of research reviews in the general area of literacy education may at this point be disappointed or even disturbed that there has not been in the discussion here so far any polarisation of the field into 'warring camps'. This review does not contain high levels of violence or abuse, but it is worth observing that war occurs in a time of crisis. The war then becomes part of the crisis and makes it more 'critical'. A literacy war, on this logic, must mean that there was a pre-existing literacy crisis; otherwise, what could have led to such public atrocities?

While some wars occur mainly to prove that there must have been a crisis in the first place, there are two senses in which there is a crisis in literacy education. First, we may interpret a 'crisis in literacy education' to mean there is 'a need for a turning point in literacy education' due to institutional inertia in the face of rapidly changing communicational environments. The eminent historian Eric Hobsbawm characterised the current moment in these terms:

> *by the 1990s … [globalization] had already transformed … important aspects of private life, mainly by the unimaginable acceleration of communication and transport. Perhaps the most striking characteristic of the end of the twentieth century is the tension between this accelerating process of globalization and the inability of both public institutions and the collective behaviour of human beings to come to terms with it.*
>
> (Hobsbawn, 1994, p. 15)

For educators, 'coming to terms with it' is an ever-present condition of professional life. Students are educated by teachers educated by teacher educators. This reflects an in-built two-generation lag in educational activities that are centrally administered by bureaucratically organised jurisdictions. So there is always an urgency about revisiting and revising literacy education practices in light of research on communicational, cultural, linguistic and economic conditions.

The second sense of crisis in and around literacy education directs our attention to certain groups in society who have always had a 'critical' relationship with schooling in general and, as a consequence, with literacy education as it is institutionally practised. Their literacy crisis may relate to sporadic access to schooling or access only to inadequate schooling, or substantial mismatches between their language repertoire and the language of use in schools, or other cultural experiences or lack of experiences for which the institutionalised schooling available to them is not adequately prepared. These issues are discussed at various points throughout this review, but it is important to note here that these are two completely different senses of 'literacy crisis' from those regularly put on display in the mass media and often in public debates about policy and practice (Freebody, 1997).

Concluding comments

Adequately researching a phenomenon called *literacy education* involves different research practices and theoretical resources in different times and places. Educating students to be members of a literate society involves some analysis of the kind of literate society that is being imagined as the 'end zone' for the learning, and an analysis of what kinds of resources, skills and dispositions the learners bring.

Research on literacy education in school is an activity carried out in the midst of at least five moving targets:

- The changing technologies through which literate communication is used, and how those technologies rework and re-present the knowledge to be learned and the ways of displaying that knowledge (Jonassen & Hyug, 2001)
- The changing pathways that young people face, including recent rapid reformations of the labour markets in many countries and the pressures that puts on learning; currently this is manifest in manual and semi-skilled work in the manufacturing and agriculture sectors drying up and symbolic/analytic, managerial and technical sectors increasing (Reich, 2001)
- Changing patterns of learning, with new tensions between the academic and vocational balances in the school curriculum (Bransford & Schwartz, 1999)
- The changing cultural and linguistic composition of Australian homes and classrooms, and the particular implications this has for literacy teaching and learning (Cope & Kalantzis, 1996)
- The changing nature of work organisations including schools, as reflected in the flat-structure, mobile skill-base restructuring characteristic of Post-Taylorist developments, as modelled on the OECD *Futures Scenarios for Schooling* website, and in the new logic of 'accountable educational provision'.

Researchers need to know how to factor these moving targets into the interests and design features of their studies, or they run the risk of trying to describe forward-looking activities and perceptions in terms that are theoretically or practically retrospective.

There is no 'neutral space' in which literacy can be generically defined for all practical purposes. The term *literacy* has various histories of use. Each of these, of necessity, has produced a manageable object of study and practice for researchers and educators alike. More recently, the pressure has been on to produce not just research-amenable versions of literacy but also policy-amenable versions – abstract, portable, and comprehensively measurable. Definitional disagreements are not just different ways of getting toward the same goal; they name the object of debate and action differently; they characterise differently the question to which literacy education is an answer. They place different kinds of 'problems' in the minds, eyes, values, families, neighbourhoods and demographic backgrounds of different learners; and, thereby, they connect, or fail to connect, with the goals and consequences of education and schooling in different ways.

Section 2 explores in more depth some aspects of these connections and discusses the ways in which researchers, working within different disciplinary orientations, study different phenomena under the heading of 'literacy education'. It then further pursues the theme of the varying understandings of literacy through a brief historical exploration of ideas about literacy as a force for social and cultural coherence. Section 3 presents a compact description and discussion of a set of research studies on various aspects of literacy education. The aim of that section is not to repeat materials compiled in other widely available reviews, but rather to supplement those materials and to address some of the more persistent challenges facing researchers. Section 4 concludes the review with a discussion of some of the thornier research issues that continue to limit the impact of research on literacy education on the activities of teachers and policy makers.

section

2 Theory, policy and research

This section outlines a sample of the settings that encircle and influence literacy education. It addresses the varying functions and effects of literacy acquisition and its spread in societies, the differing versions of literacy education constructed for study by researchers from different disciplines, the relation of research to policy in literacy education, and the relationship between literacy education and concerns over equity, including related approaches that have had some currency in literacy education, such as social justice. This section also sets out the framework for the review of empirical work that is drawn together in Section 3, along with a rationale for the use of that framework.

Understanding variations in literacy

In 1647, one of the earliest laws mandating schooling was passed. It required citizens in the young colonies of north-eastern America to hire teachers to provide literacy education for all children in the community. This law has come down to us as the 'Old Deluder, Satan' law. It explicitly named the purpose of compulsory schooling as providing young people with reading skills so that they could outwit 'the old deluder, Satan,' and, along the way, the Catholic clergy who seemed to insist that it was they alone who could interpret the Bible for ordinary citizens (Monaghan, 2005). Research on the earliest uses of reading and writing (Hall, 1996; Shailor, 1991) make it clear that literacy has long played an important role in the public administration and governance of moral and religious conduct. Whether it be Satan, foreigners, ignorance, poverty, loss of cultural identity, or an inability to participate in the global knowledge economy, having schools teach young people to read and write has often been the solution of choice.

Social and cultural variations in everyday life

We can see literacy as an emergent cultural technology in that it does not just accompany ongoing social organisation and cultural practice, but rather it can actively reorganise the domestic and public places in which it appears and people's accounts of those places (C. Luke, 1989; Ong, 1958). Debates recur over whether or not literacy has a specifically causal role in social, cultural and economic development: Does literacy of itself engender particular cognitive, social and cultural developments, making literate societies qualitatively different from non-literate societies, and therefore, are literate societies so different from non-literate societies in important and not so obvious ways (Goody, 1977)? Or are these differences matters of degree,

or are they related to other individual or collective developmental projects into which literacy becomes recruited (Finnegan, 1988)? Does literacy bring about distinct cognitive functions in the development of children (as in Olson, 1994)?

Clearly, debates around literacy education have concerned much more than matters of classroom method or remediation strategies. These debates have dealt with the nature and consequences of an individual's or a collective's becoming literate, and, moreover, with the consequences of becoming literate in particular ways. That is, we can insert into debates a concept of literacy that entails a set of individual and social resources that enable certain kinds of practices, events and organisational arrangements, rather than a single trait that is either possessed or not, or that is possessed in some quantity. Much of the discussion that follows elaborates on this idea.

Recently, there have been strong arguments to the effect that literacy educators have overstated the case for a single psychological attribute or ability called 'literacy' (Graff, 1981, 1995b). There are many reasons for the movement away from one-dimensional definitions of literacy. Some of these have arisen from an increased interest in anthropological and cross-cultural literacy research activity, bringing with it an increased awareness of the differences among and different effects of literacy, schooling and education.

These developments have affected the cognitive psychological research community, whose dispositions have been to assume the ready measurability of a culturally portable object of inquiry called *literacy*, and further to assume generic and standard effects of its dissemination. One of the earliest systematic studies of these issues was conducted by cross-cultural cognitive psychologists Scribner and Cole (1981). They documented a 'natural laboratory' setting in which the Vai people of Liberia were in the process of acquiring communal literacy practices. The Vai had developed their own indigenous script, taught to children out of school in family settings, as well as using English (Latin script) and Arabic. Among many other things, Scribner and Cole found that each of these languages was used for particular functions in specific places and relationships, and that each seemed to develop and sustain a distinct set of skills. Vai writing tended to be used for personal, domestic functions, Arabic for Koranic teaching and learning, and English in public administrative and governmental settings. However, their conclusion was not that each of these languages, of itself, evoked and sustained these distinct sets of skills, but rather that each language was taught in a distinctive way and used in different settings, and it was these conditions of learning and use that predicted the skills brought along with the literacy. Greenfield, in a review of Scribner and Cole's book, described it, prematurely by a long stretch, as spelling the end of a set of unsustainable claims about literacy:

> *Scribner and Cole's study should rid us once and for all of the ethnocentric and arrogant view that a single technology suffices to create in its users a distinct, let alone superior, set of cognitive processes.*
>
> (Greenfield, 1983, p. 219)

Scribner and Cole did, however, draw strong conclusions about the effects of schooling on the development of certain kinds of cognitive skills and dispositions. An important outcome of their research was an awareness of how easy it is to confound school effects and literacy effects, and how much of a problem that can cause for research, theory, practice and policy. Natural laboratory settings such as the Vai in the mid-1970s helped to highlight the misleading effects of that confounding. Olson (1994) summed up the key message from Scribner and Cole's project in these terms:

> *Literacy in western cultures is not just the learning of the 'abc's'; it is learning to use the resources of writing for a culturally defined set of tasks and procedures. All writers agree on this point ... [Literacy] is the evolution of those resources in conjunction with the knowledge and skill to exploit those resources for particular purposes that makes up literacy.*
>
> (Olson, 1994, p. 43)

Issues relating specifically to literacy learning, therefore, are rarely independent of differences in access to schooling. Failure to make a clear distinction between literacy and schooling effects more generally has continued to mislead many attempts to monitor progress in literacy teaching and learning.

Epistemological variations across the disciplines

Education refers to public, institutional activities as well as to a collection of everyday, informal practices. There is now an 'educational research industry' with formal guidelines for conduct, aimed at the accumulation of knowledge and at influencing professional and policy activity. In this formal domain, researchers aim at research characterised by programmatic, cumulative projects, visible methodic conduct, and the use of recognisable theoretical and methodological traditions from the social and behavioural sciences. The immediate problem here, from the point of view of producing a review, is that education draws on many disciplines for its knowledge bases, and different disciplines have different conventions concerning proof of truth and value. We can consider the potential compatibility of these conventions, but the fact is that some have developed directly as hostile responses to others. Further, both educational practice and policy making have long histories and have thereby developed substantial funds of guild or craft knowledge. So, varieties of research-based knowledge and guild knowledge are potentially in play in any given educational decision and on any given site of practice or policy.

Literacy: What kind of puzzle?

The varying definitions and methodologies that have been brought to bear on questions about literacy education point to the different ways in which each of the disciplines that have had major impact has brought into being an individual object of inquiry. Each of these disciplines – initially philosophy and psychology, later joined by linguistics, anthropology, sociology and economics – has attendant methodological preferences and each produces a particular version of the practices, understandings and dispositions to be studied. Each presents literacy and schooling, reading and writing as particular kinds of 'puzzles', rather than simply descriptions of phenomena that are already fully known on the basis of our everyday experiences. In that regard, much of the available research unavoidably produces systematic silences about the experience of literacy education in contemporary societies.

Literacy education as a textual puzzle

Researchers work on the structure of material scripts and orthographies, grammars and genres, and the particular manifestations of these in differing languages (e.g., Joshi & Aaron, 2006). Researchers aim as well to make theoretical and empirical advances in the study of in- and out-of-school texts. Much prominent research and theory in these areas has been developed within the tradition of Systemic Functional Linguistics, including analyses of multimodal texts (Christie & Martin, 2007; Kress & van Leeuwen, 2006).

Literacy education as a psychological puzzle

Literacy involves processes of perception and cognition. Researchers study these because they influence acquisition of the codes and comprehension that are part of reading. Following trends within cognitive science the nature of the puzzle has shifted. In rough terms, psychology's journey has taken it from Huey to the mid-1960s, during which period behaviourist models enjoyed prominence. These foregrounded external contingencies, including rewards and modelling processes (Chall, 1967). From the mid-1960s to the mid-1980s, cognitivist models of information processing highlighted the ways in which the systems of perception were related to existing knowledge as readers and writers built new knowledge through literacy practices (Gaffney & Anderson, 2000; Royer, 2005).

More recently, the attention of psychologists interested in literacy education has turned to 'distributed' and 'social' cognitive models of teaching and learning reading and writing. These

models avoid the simplistic separation of the learner from the social contexts of learning. Meaning and knowledge are taken to be constantly involved in a process of construction, never static within an environment, always dynamic, and built through exchanges that move between what is known and what is not known (Resnick, Saljo, Pontecorvo, & Berge, 1997; Rogoff & Lave, 1984; Saloman, 1993).

Literacy education as a cultural puzzle

The theoretical bases of anthropology have framed a domain of study that foregrounds the institutional settings of literacy practices, including literacy education (Street, 1995). The nature and consequences of the privileged position of institutional practices, in comparison to practices evident outside formal educational sites, forms a central topic of inquiry. Here the focus is on the ways in which literacy becomes a fulcrum for a distinct set of teacher–learner relations that parallel and can serve to naturalise the relations of minority class, gender or racial groups within mainstream schooling.

The intricate relationships between schooling and socioeconomic disadvantage, and the key role of literacy in the construction and maintenance of those relationships, give the cultural puzzle an ideological edge in many research communities. Where language and literacy policies have direct reflections in party and national politics, as, for example, in apartheid South Africa or divided Kurdistan (Hassanpour, 1993; Janks, 2000; Prinsloo & Breier, 1996), there has never been any question about the ideological functions of literacy education.

Literacy education as a puzzle over schooling and power, order and reform

Sociologists, economists and critical theorists from a variety of domains have examined how the practices and policies of literacy education can naturalise, stabilise, or interrupt existing social and socioeconomic arrangements. The puzzle here is partly about documenting how literacy is and can be used as a public device to embed coded messages about both encouragement for and resistance to socioeconomic and cultural changes within a society (Freire & Macedo, 1987). In this line of inquiry, the puzzle includes seeing fluency in literacy skills, flexibility and functionality, agency and productive creativity as social goods that are embodied in literacy activities and through the means of production, distribution and exchange of those goods. Literacy has also been seen as a mask for other interests – the production of a docile populace in the face of savage inequalities of access and material resources (as in the disputes over the UNESCO EWLP, described in Section 1), and the increasing multiculturalism and multilingualism of many industrialised countries.

In their work on teaching and learning of and about reading and writing in schools, teachers, policy makers and researchers necessarily take a stand, however explicitly, on what kind of puzzle they take literacy teaching and learning to be. For some, their stand is a combination of the approaches sketched in the collections of puzzles outlined above. Clearly, each reflects a history of victories and defeats of particular ideas about the definitions of *literacy* and *education*. But equally these victories and defeats have happened over ways of using language, ways of relating to one another in domestic, civic and vocational life, and ways in which those particular ideas emerge from and privilege the experiences of particular groups in society.

Literacy and the structure of public life

Literacy has been credited, plausibly or otherwise, with stimulating or even enabling advances in science and technology, in logical thought, in economic development, and in democratic governance (Graff, 2001). It has also been held responsible for the demise of hundreds of languages (Crystal, 2002; Nettle & Romaine, 2004), for perpetuating cultural imperialism after formal colonial rule (Ostler & Rudes, 2000), and for stunting the potentially wide array of human forms of thought and creative expression. These are large claims that warrant the perennial attention paid to literacy education. However, the theoretician who has most fully developed our understanding of the profound implications of literacy for human society,

and of reading and writing as social and sociological practices is Canadian sociologist Dorothy E. Smith.

Smith showed how contemporary societies are unique in history in that our everyday experience is systematically recast, re-evaluated, and standardised via the importing of criteria from outside the settings of those experiences – the 'extra-local, textual ruling' as she has called it. This position shows how our engagement with texts – how we have learned to read and write – connects global, public and private experiences. Smith argued that these processes of learning to read and write are a major way in which we come to understand the relationships between the ways in which we communicate and the material conditions in which we live. The argument is that conventional forms of literacy education do this partly by attaching young members of a society to textual forms of social organisation. That is, Smith has argued and demonstrated in a range of institutional settings, such literate societies, radically unlike others, recruit textual print and digital materials, and thus rely upon specific forms of reading and writing among their members, to continually re-establish relations of ruling:

> *We are ruled by forms of organization vested in and mediated by texts and documents, and constituted externally to particular individuals and their personal and familial relationships. The practice of ruling involves the ongoing representation of the local actualities of our worlds in the standardized general forms of knowledge that enter them into the relations of ruling. It involves the construction of the world as texts, whether on paper or in a computer, and the creation of a world in texts as a site of action. Forms of consciousness are created that are properties of organization or discourse rather than of individual subjects.*

(Smith, 1987, pp. 2–3)

Further, some of the paradigms that have conventionally informed education (e.g. psychology, sociology, developmentalism and constructivism) actively conjure particular 'ontologies' that appear to naturalise ruling interests, through discourses about children and childhood (Baker & Freebody, 1989; C. Luke, 1989), literate learners (A. Luke,1988), and competent, functioning citizen-workers (Lankshear, 1987; Gee, Hull, & Lankshear, 1996).

Smith's is a message for researchers, policy makers, teachers and students. It connects research in the teaching and learning of literacy with strong current concerns about individual isolation in globalised conditions (Smith, 2006). The ways in which contemporary schooling constitutes a process of 'dis-embedding without re-embedding' young people in social life (Ball, Maguire, & MacRae, 2000; Beck, 1992; Beck & Beck-Gernsheim, 2002) has direct implications for the qualities of literacy education offered in schools, stated most broadly, acculturated into passive or proactive communicators.

Smith's contribution to an understanding of what it means to become literate, and how it is that this technology has been put to particular ideological work, is unique. It goes beyond a mere set of assertions about literacy being crucial for 'getting about' physically, intellectually, emotionally and epistemologically. It draws attention to the impossibility of forms of consciousness and social life such as ours without the cultural technologies of literacy and the administrative technologies and appurtenances that literacy provides.

Literacy education and policy

Literacy education is a key policy focus in many countries. Some of the reasons for this seem obvious in light of the argument above about the significance of literacy capabilities for individuals, communities and nation states. But the motivations driving particular policy interventions in literacy education are topics of considerable debate. In some policy formulations, as in the social and curricular definitions and uses of literacy outlined in Section 1, we find literacy characterised variously as a set of interrelated capabilities, as a human-capital resource that signals educability, (re)trainability and as an object inserted into debates about the performance of teachers, schools and governments.

To demonstrate some of these issues at work, this section presents a brief outline of comparisons and contrasts between two significant policy interventions in literacy education: the *Literate Futures* project in Queensland, Australia, and the *No Child Left Behind* project in the United States of America. The aim here is to outline how their positions contrast on key assumptions about literacy, schooling, the students entering schools, and the future needs of those students.

Literate futures in which no child is left behind

Recommendations arising out of *Literate Futures* were based on a particular analysis of the cultural and economic characteristics and trends evident in Queensland and a set of findings from a state-wide review of literacy teaching in primary and secondary state schools. This review contrasted with the many reviews conducted by or for other agencies (Adams, 1990a; Keeves & Bourke, 1976; McGaw et al., 1989; Masters & Forster, 1997; Snow, Burns, & Griffiths, 1998). To supplement the findings from such reviews, the *Literate Futures* team visited schools, interviewed teachers, principals, students, parents and interested community members, observed lessons and drew together policy documents, data relating to general educational achievement in Queensland schools, and data relating to literacy capabilities among Queensland students and to key demographic features of the state. The aim was to distil a set of 'burning issues' in literacy education that could in turn be used to generate an actionable reform program in literacy education.

From this program of data collection, four themes came to constitute the central findings of the review:

- With regard to students' diversity, recommendations included a focus on 'annual and triennial "distance travelled" school targets for improved student outcomes using a range of assessment data'.
- The involvement of teachers, parents and, potentially, other stakeholders in the development of a whole-school literacy plan was the focus of the whole-school planning theme.
- The teaching of reading, a matter of considerable and ongoing debate in many schools and local communities, was to be reshaped by *Literate Futures* through the deployment of what were termed 'balanced, multi-method approaches based on taking up opportunities for outsourced professional development, training and mentoring'.
- Based on its reliance on an analysis of future demands on people in their civil and vocational lives, the policy placed importance on the use of new technologies and multiple modalities as routine aspects of school literacy work across the school years and curriculum areas.

By way of contrast, the policy intervention *No Child Left Behind* at its introduction, was characterised in these terms:

> *[The NCLB Act] will help close the achievement gap between disadvantaged and minority students and their peers. It is based on four basic principles: stronger accountability for results, increased flexibility and local control, expanded options for parents, and an emphasis on teaching methods that have been proven to work.*
>
> *Test data will be reported by economic background, race and ethnicity, English proficiency and disability.*
>
> *Measuring progress by subgroups will demonstrate not just that overall student performance is improving, but also that achievement gaps are closing between disadvantaged students and other students.*
>
> *Holding schools accountable for the academic achievement of all subgroups ensures that no child is left behind.*

(retrieved from http://www.ed.gov/programs/readingfirst/legislation.html on 8 June 2007)

Literate Futures and *No Child Left Behind* gave pride of place to contrasting kinds of research traditions and to different analyses of the future needs of individuals, societies and economies. The significance attributed to the discourses of 'students with special needs' and to the details of debates about specific teaching methods for teaching, reading and writing, so central to the *No Child Left Behind* project, remains peripheral to the concerns motivating the *Literate Futures* project. So the two policies characterised the problems to which they aim to respond in qualitatively different ways. Each presents a distinctive 'take' on perennial conflicts about teaching strategies, about research methods and methodologies, about what counts as 'evidence', and about how, where and to whom educational systems and individual teachers can and should be held accountable, assessed against recommendations based on that evidence.

The two policy interventions implicitly posit sharply contrasting views of schooling and its role in 'delivering' literacy capabilities to young people. The *Literate Futures* project explicitly critiqued a number of the assumptions guiding traditional schooling in general including the following:

- that a fundamental role of teachers is to deliver the aims of central policy in all of the educational settings within a jurisdiction
- that pre-service education for teachers can and should constitute adequate preparations for this role
- that the students entering the schools within a jurisdiction are homogeneous, in particular in terms of their social, cultural and linguistic backgrounds, or at least sufficiently so for the practical purposes of schooling
- that the demands of the work opportunities that await students when they finish school are relatively stable and knowable
- that collections of knowledge, skills and dispositions that provide adequate simulations of working and learning sites outside school can be identified and that those collections can be centrally mandated within an educational jurisdiction
- that the syllabus is a stable and portable guide to practice in school
- that definitive guidance on which teaching approaches are to be used should be offered by statutory bodies and central office
- that early literacy education establishes appropriate and adequate skills for reading and writing for both in and out of school, and that, therefore, the responsibility for literacy education rests with teachers working in the early years of schooling
- that beginning literacy skills, as they are taught in early schooling, are necessary and sufficient preparation for future school work across the years and curriculum areas
- that there are obvious and commonsensical standards for literacy learning across the school years.

The authors of the report on which the *Literate Futures* policy was based critiqued these assumptions in this way:

> *These guidelines do not map well onto what we know about the knowledge demands of disciplines, about the challenges of citizenship and about new patterns of work in contemporary societies, about the emergent multi-literacies, and about the optimal organisational environments for literacy learning.*

(Luke, Freebody, & Land, 2001, p.7)

Many of these assumptions listed above for critique in *Literate Futures* are in fact precisely compatible with the general approach of *No Child Left Behind*. That is not to say that these assumptions are simplistically held or applied in the *No Child Left Behind* policy documentation or among its adherents. These contrasts, however, directly raise the question of the level of evidence that can and should be brought to bear on policy decisions, and how disagreements among researchers can or should be resolved as they bear on such policies.

Regardless of what have been, or should have been the outcomes of these debates, it is important to recognise that policy related to literacy education is as much about debates concerning what counts as 'rigour in evidence', that is, about research methodology, as it is about what the concept of *literacy* entails, what aspects of human knowledge, skill and disposition it brings into play, or how learners should be taught how to use these, and what they mean for learning and social participation in school. For example, the particular ways in which 'the teaching of phonics and phonemic awareness' is or might be optimally enacted in those classrooms where the target categories of students are prevalent are not empirically established. This is partly because a principled approach to such levels of specificity needs to rely on evidence that is not only experimental. It is ethnographic, observational documentary methods that are needed to establish these patterns in the first place, so that they could then be rigorously manipulated in experimental investigations. In the case of *No Child Left Behind*, such categories of inquiries were explicitly ruled out of the reviews on which the interventions were based because they did not satisfy the methodological criteria for inclusion.

President of the American Educational Research Association at the time of the policy's implementation, Darling-Hammond, commented in these terms five years after the initiation of the policy:

> *recent analyses have found that rapid gains in education outcomes stimulated by reforms in the 1990s have stalled under* No Child Left Behind*, with math increases slowing and reading on the decline. At base, the law has misdefined the problem. It assumes that what schools need is more carrots and sticks rather than fundamental changes ... We badly need a national policy that enables schools to meet the intellectual demands of the twenty-first century. More fundamentally, we need to pay off the educational debt to disadvantaged students that has accrued over centuries of unequal access to quality education.*

(Darling-Hammond, 2007, p. 165)

Darling Hammond's comments about the negative, if variable, effects of NCLB on achievement in reading and maths have been confirmed in recent research by Fuller et al. (2007). Darling Hammond argued that the key shortcomings of the policy lay in the price it paid for administrative and legislative manageability and governmental forms of accountability. It failed to conceptualise literacy learning in terms of broader educational and social goals, such as other public incentives for employment, transportation and training in disadvantaged neighbourhoods.

These two policies were aimed largely at improving literacy, and both were predicated on an understanding of its importance for the ongoing push toward equity of educational provision and access to economic and other social goods for traditionally disadvantaged, disenfranchised and residualised groups. Their differences and the debate they generated indicate that this connection, so self-evident in most policy formulations, is in fact complex and multifaceted as an object of theoretical and empirical inquiry.

Literacy education and equity

The literacy capabilities of individuals and collectives – their skills, knowledge, dispositions and practices – have long been recognised as having the potential to progress a society toward a more equitable distribution of social and economic goods. Put in the negative, a calculation of the precise monetary cost to the economy of 'inadequate literacy levels' has become a familiar preface to announcements of policy reform. The potential of improved literacy to enhance levels of public participation has been another abiding theme. Linked to both of these themes has been a still-current, centuries-old acknowledgment of the important part that public bodies have in distributing literacy capabilities.

out of the surplus taxes, and in room of poor-rates, four pounds a year for every child under fourteen years of age; enjoining the parents of such children to send them to school, to learn reading, writing, and common arithmetic … By adopting this method, not only the poverty of the parents will be relieved, but ignorance will be banished from the rising generation, and the number of poor will hereafter become less, because their abilities, by the aid of education, will be greater.

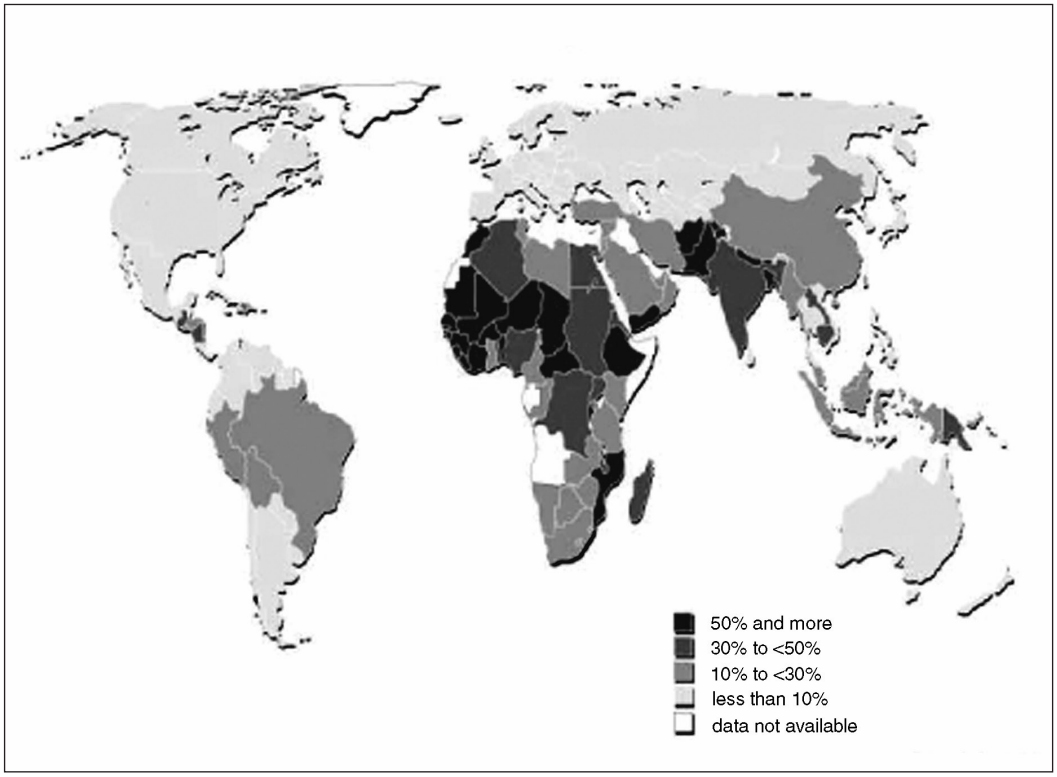
(Paine, 1791, pp. 79–80)

The Government believes that schools should equip all children who enter education with basic literacy and numeracy skills ... Australia will go a long way towards countering other forms of educational and social disadvantage if strong foundational literacy and numeracy skills are successfully taught to all children.

(DETYA, 1998, p. 8)

In considering literacy and equity, it is useful to start globally. Such a perspective can offer a beginning sense of the international distribution of literacy capabilities, as least as assessed, in this case, by UNESCO surveys. Figure 4 is UNESCO's 2002 'il-literacy' map of the world, based on people over the age of 15 years (inexplicably minus the Pacific islands).

Figure 4: The world literacy/illiteracy map



UNESCO, 2002b

Some immediate observations about the distribution of illiteracy can be made:

- countries that are less or least developed economically tend to be below 'average' on adult literacy rates
- post-colonised countries also tend to be below 'average' on adult literacy rates
- the linguistic, cultural and socioeconomic homogeneity of a country and its literacy levels seems to be significant
- there seems to be a relationship between mass access to schooling and literacy levels.

Table 1: Projected and actual world adult literacy rates, by gender

Adult literacy rates %									
	1990			2000			2015		
	Total	Male	Female	Total	Male	Female	Total	Male	Female
World	75.3	81.7	68.9	79.7	85.2	74.2	85.0	89.0	81.0
Developed and transition countries	97.7	98.5	96.9	98.6	99.0	98.1	99.3	99.4	99.2
Developing countries by region:	67.0	75.9	57.9	73.6	81.0	66.1	81.3	86.5	76.1
Sub-Saharan Africa	49.2	59.3	39.5	60.3	68.9	52.0	73.9	79.7	68.2
Arab States	50.2	63.8	35.8	60.1	71.7	47.8	71.7	80.1	62.9
East Asia and the Pacific	80.3	88.1	72.2	86.6	92.5	80.6	93.3	96.5	90.1
South and West Asia	47.5	59.7	34.5	55.3	66.4	43.6	65.6	74.5	56.3
Latin America and the Caribbean	85.1	86.8	83.4	88.9	89.9	87.9	92.9	93.2	92.5

Table draws on data from UNESCO (2002a)

Consequences flow from taking the nation or the region as the unit of analysis. Even a cursory examination of the UNESCO data in Figure 4 and Table 1 indicates that in some states a particular variable, such as gender or socioeconomic status or language spoken at home or in an urban or rural location might matter dramatically for adult literacy rates, while in other states, the effect may be far less significant, trivial, or even in a reverse direction. For example, the case of females' small advantage over males in Anglophone Western nations is reversed in other nations, with males apparently enjoying, in some cases, massively higher rates of literacy competence (UNESCO, 2002b).

As a general observation about the question of the relationship between literacy education and equity, it is striking how much of the extensive research literature focuses on the years prior to school and the early years of schooling. One inescapable conclusion is that the key explanation for the 'educational disadvantage' with which schooling is associated statistically is taken to lie in homes and families and in their variable relationship to the contents, practices and organisation of schooling. The literacy education made available as older students choose their areas of study, and as they approach the high stakes assessments that will determine their later pathways, has received consistently less attention, in spite of the prima facie case for its relevance to the literacy–equity connection. Whatever else that imbalance of research attention has done and continues to do, it at least continues to lay equity issues squarely at parents' feet.

Much of the emphasis in research and policy has been on literacy because it is seen as core business in the issue of education and disadvantage. There is a long tradition of the conceptual and empirical work on social justice categories, generally based on socioeconomic status, gender, able-bodiedness, sexual preference, and race and ethnicity. Contemporary theoreticians with these interests (Fraser & Honneth, 2003; Gewirtz, 1998; North, 2006) have drawn attention to schooling's ongoing role in the redistribution of social goods, the recognition of the claims of diverse and disadvantaged groups, and the potential upward mobility of these groups.

There has been a long tradition of research confirming a strong correlation between material affluence and aspects of school achievement, especially literacy, and especially in printed English. The extent and importance of that correlation seem not to change a great deal over time or across locales. What have changed are the explanations for that correlation and the differing educational recommendations that arise from those explanations. Figure 5 on page 24 contains some differing 'takes' on the relationship between the concepts *literacy education* and *disadvantage*.

Figure 5: 'Takes' on literacy education and educational disadvantage

As pathology:

using pre-school enrichment as an antidote for cultural deprivation

(Hunt, 1964, p. 209)

As cognitive socialisation:

the meaning of deprivation is a deprivation of meaning – a cognitive environment in which behavior is controlled by status rules rather than by attention to the individual characteristics of a specific situation

(Hess & Shipman, 1965, p. 885)

As the public allocation of personal attributes:

The socioeconomic/sociocultural cycle, in which developmental disadvantage leads to educational disadvantage, which, in turn, leads back to employment disadvantage which leads to economic disadvantage.

(Williams, 1970, p. 3)

As random:

cultural-intellectual environment of the home in the case of some families' is not as conducive to literacy development as in others.

(McGaw, Long, Morgan, & Rosier, 1989, p. 91)

As deliberate:

The correlation of 'socioeconomic status' and 'test results' which is so familiar a result in educational research is not only un-surprising; it is, in a basic sense, intended. If the poor were shown to be more clever than the rich a drastic de-legitimation of the social order, and the education system, would result.

(Connell, White, & Johnston, 1992, p. 22)

These otherwise very different accounts of educational and literacy disadvantage share a disposition to sheet home the basic explanation for disadvantaging practices to the family, essentially the parents. The accepted view in many circles was summarised by Lightfoot in these terms:

> *they [parents in poor communities] do not care about the education of their children and are passive and unresponsive to attempts by teachers and administrators to get them involved, and are ignorant and naive about the intellectual and social needs of their children*

(Lightfoot, 1978, pp. 35–36)

The appropriateness of this attribution has been rarely challenged through any empirical work. An exception is Fraatz (1987), a political scientist who became interested in the issue of reading in school and 'parental involvement' when one of her children was identified by the school as needing additional help in reading. She examined the scholarship informing the question of literacy, schooling and parental involvement, and conducted a long-term study of the processes based on her own experiences. Among her conclusions was the assertion that common public discourses and much of the received research about 'literacy-negligent' parents did not capture the complexity of the views of school personnel toward parents or the nature and consequences of the exchanges between these groups.

Fraatz critiqued views such as those expressed by Lightfoot through the use of the key concept of 'the mobilisation of bias'. By this she refers to arrangements, practices and policies that not only overwrite people's everyday experience of domestic, civic and vocational life in ways that facilitate administrable needs, but which do so in ways that mobilise the potential for racial, sexual or class bias. This bias Fraatz saw as existing not just in the content of literacy tests, but more significantly in the unnoticed organisational structures of the school's literacy practices and assumptions. Central to these bias-mobilising practices, she claimed, is discourse about parents' involvement in reading support programs.

On the basis of interview and observational data, she went on to offer the following cautionary comments about parent involvement programs:

> *The virtues of parent participation … are rather different from what … conventional wisdom suggests. Parent involvement in schooling is far more important for the support it offers the school's mobilization of bias than it is for improving the achievement of disadvantaged students. It induces parents to consent to the ways schools define educational interactions*

(Fraatz, 1987, p. 126)

and later:

> *The compassionate teacher who wants 'input' from low-income parents supports the mobilization of bias every bit as strongly as the hostile teacher who believes parents don't care. Both control the definition and meaning of children's attributes in the classroom. Children's vocabularies, their grammar, their level of 'maturity', their 'independence', their work habits, their play habits, their social skills – all of these are judged against the backdrop of the ways schools structure learning.*

(Fraatz, 1987, p. 163)

The most significant characteristic of contemporary literacy education in schools is this: that literacy education is fundamentally about how public institutions begin to relate to young children from very different domestic and cultural settings and begin to introduce them to the skills, dispositions and powerful bodies of knowledge that the society most values. Fraatz's work provides a powerful antidote to the tendency to regard problems in the teaching and learning of literacy as being mainly about individuals, their psychological states or processes, or their parents.

In that light, we can see that the processes of school literacy are often about re-teaching young people a version of their own language, and, since the push to make beginning reading materials in schools seem 'relevant' to young learners, a version of their own everyday culture. As Baker and Freebody put it following their linguistic and cultural analyses of the contents of early school reading materials:

> *children's first school books, in explicit and implicit ways, propound a version of childhood – in effect a theory of how children think, act and talk, and of their position in the social world. This invites, and possibly requires, children to revise their own identities at least for purposes of successfully engaging in school reading instruction and in using the discourse of the books to talk (indirectly) about themselves.*

(Baker & Freebody, 1989, p.152)

Baker and Freebody concluded that the more 'relevant' the official curricular or commercial materials of early literacy education, the more they take a stand on the everyday lives of 'the child'. Thus, precisely because they are aiming at using a notion of relevance to enhance young learners' engagement in reading and writing, the more these materials of early school reading can form part of an invisible set of disadvantaging and culturally disenfranchising processes.

The organisation and provision of literacy education in a particular society reveal that society's public declarations about its participation in social life, in particular with regard to minority and disenfranchised individuals and groups:

> *[u]ltimately Literacy reflects inequalities in society: inequalities of power, inequalities in the distribution of wealth, and inequalities in access to education … Literacy can only be fully understood in the context of these social relations.*

(Barton, 1994, p. 218)

Public beliefs about 'how they need to be taught to read and write' serves in part to re-legitimate those declarations, and this is not necessarily a criticism – the declarations may be both warranted and productive. What is reflected is a direct connection between literacy practice and policy, a connection that research programs about literacy education cannot disingenuously ignore.

The recurrence of a robust correlation between academic achievement, more specifically literacy test performance (as reported in the PISA study by OECD, 2004, for example), on the one hand, and socioeconomic status on the other, can lead to the impression that this is a relationship that exists in nature. In fact this correlation, as with the relationship between literacy capabilities and other recognised equity-oriented categories of people, can vary across nations, cultures and jurisdictions. Changeable conditions affect the strength and direction of these relationships. These relationships, therefore, are 'social facts', the achievements of certain educational and social arrangements and forms of practice, and the assumptions that hold them (however unsteadily) in place. But, even in that light, for correlations of these magnitudes to be so durable in certain nations, it must be that gender, socioeconomic status, language spoken at home, urban or rural location, and the rest, all need to be somehow actively converted into educational disadvantage. These relationships are the results of often unnoticed social and institutional practices and beliefs. For example, as Teese and Polesel (2003) have argued, professional development, syllabus development and teacher education activities need to operate on the assumption that teachers work in standard, not optimal, material and cultural conditions:

> *Without a focus on how the teaching of a subject is conducted in the most characteristic settings of the school system, the cognitive architecture of the subject – the structure of its demands and the pace at which key concepts are introduced – will continue to be treated as essentially the same for all students. Inequality begins with this assumption, and with the great pressures placed on teachers to reverse its effects.*

(Teese & Polesel, 2003, p. 223)

Teese and Polesel made this point for school subjects generally, but it applies even more forcefully to literacy teaching and learning. High school curricula, assessments and teaching practices assume specific curriculum-literacy capabilities among the learners, and thus often focus on content. Literacy lessons in the early school years assume high levels of topic knowledge and knowledge about interactional conventions, purposes for reading and writing, and standard expectations about standard children's experiences, and thus often focus on the mechanics of reading for accuracy and literal, technical features of textual meaning. The argument put by Teese and Polesel is that narrowing the focus in these ways intensifies the marginalisation of disadvantaged groups and individuals, at the same time as leaving their teachers and parents with few theoretically adequate accounts of that marginalisation.

Teese and Polesel showed that high-achieving students from professional and other privileged socioeconomic backgrounds routinely chose the 'long hard subjects' in their senior years, giving them, among other things, an advantage in access to tertiary studies. These long, hard subjects are those that require a long-term build-up of highly specialised literacy practices that are taken in turn to reflect highly specialised cognitive practices and organised knowledge bases that together allow the expression of increasingly complex and cumulatively organised knowledge (Martin, 2007; Christie & Martin, 2007). In that regard, these curriculum domains can be considered as ongoing apprenticeships into specialised communities of intellectual and linguistic practice. Performances on generic literacy tests aside, access to these apprenticeships

is strongly related to equity categories, and it is progress in such apprenticeships that relates to long-term opportunity structures for individuals and collectives.

The role of literacy education in the production, reproduction and maintenance of material privilege and disadvantage in the shifting socioeconomic conditions characterising contemporary Australia (Stilwell & Jordan, 2007) is significant. That role has motivated much of the substantial corpus of research in the area, and how that role is to be understood has itself been central to key theoretical and policy debates.

Researching literacy education in practice and in theory

It is evident from the previous discussion concerning the conceptual and empirical traditions used by practitioners of the various disciplines that have contributed to the study of literacy education, that debates about literacy and research are, as well, often debates about research method and methodology. It is appropriate, therefore, that some direct attention is paid to those matters to provide a general frame for the discussions of research in the sections that follow.

Essential versus procedural approaches to literacy teaching and learning

A useful starting point for the consideration of issues of method is Alain Desrosières's encyclopedic account of the history and status of statistically based research on human behaviour (1998). At the time of writing his text, Desrosières was the director of the French National Institute of Statistical and Economic Studies and his interest was in inquiring into the historical formations that gave rise to, and that were in turn made possible by the development in the nineteenth and twentieth centuries of statistical ways of conceptualising the behaviour of both humans and nation states. One of the aims of his research was to come to an understanding of the widespread and growing tensions between quantitative and qualitative approaches that contest the study of human behaviour.

First, Desrosières pointed out that among some practitioners, certain kinds of social phenomena are taken to exist independently of the methods through which they have been studied, specifically the means used to document data, the sites, the conditions and the focus of measurement. The key issues for researchers working with these assumptions and methods concern the reliability, validity and utility of the statistical representations of the phenomena at hand. These data are 'there', more than metaphorically, as objects in the environment, and so what must be attended to is the care with which they are sampled, collected, classified and put to work.

Desrosières pointed out that, on the other hand, there are practitioners in the human sciences who emphasise the local, variable, contingent and multiple nature of cultural, social and institutional events, activities and practices. The view here is that our sense of the very existence of a phenomenon is in fact a product of the conventions that have developed to name, characterise, contexualise and measure it, and that these conventions are thus always matters of variation and debate.

Desrosières commented on the contrast in these terms:

> *The student, research worker, or statistical data-user receives compact concepts, encapsulated into concise and economical formulas – even though these tools are the result of a historical gestation punctuated by hesitations, retranslations, and conflicting interpretations.*

(Desrosières,1998, p. 2)

The application of statistical methods, combined with developing ideas in probability in the study of individual and collective behaviour, was critical not just for the growth of the human sciences but for the application of the findings from those sciences to state policy. As many nation states grew out of monarchies into representation-based systems of government after the French and American revolutions, the concept of 'the people as a whole' emerged as a political concept, and the legitimacy of governments came to relate directly to their ability to

provide basic levels of goods and services to 'the people as a whole'. So some ways of coming to know about the needs, aspirations and views of the people that made up the nation were required, particularly in view of the fact that many of these people were geographically distant and culturally different from most of those at the seat of political power. It was at this time that the growing sophistication in the combined application of general statistics and probability theory produced 'the average citizen' (Quetelet, 1835), a concept that came to the fore in the service of the state (hence the term *statistics* – calculations of the state).

The conceptual technique that this afforded was the establishment and use of categories of equivalence (for example, for our purposes, 'the good reader', 'literacy teaching', 'reading ability', 'reading levels', and the rest) that can transcend the singular contingencies of local cultural, social and institutional events, histories, activities and practices, and thereby become encapsulated as objects of administration.

> *In science in the making (of 'hot' science), truth is still a wager, a subject of debate; only gradually, when science cools down again, are certain results encapsulated, becoming 'recognized facts,' while others disappear altogether.*

(Desrosières, 1998, p. 5)

Desrosières argued three key historical points: that nation states have often put the logic of statistical reasoning to productive administrative use, that they continue to do so, and that the ways in which they do so constitute key moves in the building, unification and administration of the modern nation. Effectively, such reasoning makes elements of the behaviour of individual people, communities, and whole nations amenable to discussion, debate, policy and governance. At the same time, it presents techniques by which the efficacy, comprehensiveness and fairness of policy makers can be made accountable to 'the people as a whole'. Understanding the limitations and possibilities of statistical reasoning provides a way of refining debates between practitioners committed to contrasting paradigms and forms of inquiry, and is thus a way of containing the potentially debilitating effects of those debates on a field of study.

The 'objects' of literacy research

For the conduct of research on people, it becomes critical to understand the nature and extent of the investment of societies and administrations in certain 'objects,' and the professional investments of researchers themselves. A first question for researchers in literacy education is: What are the 'objects' that populate research on literacy education? We can see from a sample of influential summaries of the research literature what forms these objects take. Figure 6 presents a selection of key statements from these summaries, with the emphases added to highlight the 'coded' language that refers to activities apparently fully recognised by the intended readership as distinct, encapsulated 'objects'.

Figure 6: Sample of influential literacy and reading education research summaries

From the replies [to the surveys of the teaching of reading to 33,000 children in Australia in 1933] given it appears that the order of popularity in teaching method is: **phonic**, **look-and-say**, and **alphabetic**. Usually two or three of these are employed in combination.

(Mcintyre & Wood, 1935, p. 1)

Approaches in which **systematic code instruction** is included along with the **reading of meaningful connected** text result in **superior reading achievement** overall, for both low-readiness and better prepared students … Programs for all children, good and poor readers alike, should strive to maintain an appropriate balance between **phonics** activities **and the reading and appreciation of informative and engaging texts**. … Because children have special difficulty analyzing the phonemic structure of words, reading programs should include explicit instruction in blending.

(Adams, 1990a, pp. 123–128)

Programs in all of the studies provided **explicit instruction in phonemic awareness**. Specifically, the characteristics of PA [phonemic awareness] training found to be most effective in enhancing PA, reading, and spelling skills included **explicitly and systematically teaching** children to manipulate phonemes with letters, focusing the instruction on one or two types of phoneme manipulations rather than multiple types, and teaching children in small groups.

(US National Reading Panel, Findings and Determinations Section, 2000)

Adequate initial reading instruction requires that children:

- use reading to obtain meaning from print,
- have frequent and intensive opportunities to read,
- are exposed to frequent, regular spelling-sound relationships,
- learn about the nature of the alphabetic writing system, and
- understand the structure of spoken words.

... Comprehension can be enhanced through instruction focused on concept and vocabulary growth and background knowledge, instruction about the syntax and rhetorical structures of written language, and direct instruction about comprehension strategies such as summarizing, predicting, and monitoring. Comprehension also takes practice, which is gained by reading independently, by reading in pairs or groups, and by being read aloud to.

(Snow, Burns, & Griffin, 1998, Executive Summary, pp. 4,7)

Findings from the research evidence indicate that all students learn best when teachers adopt an **integrated approach to reading** that explicitly teaches phonemic awareness, phonics, fluency, vocabulary knowledge and comprehension. This approach, coupled with effective support from the child's home, is critical to success ... The (US) National Reading Panel further identified specific text comprehension skills that enable children to develop higher order thinking skills, and how the **integration and comprehensive approaches** to literacy enable children to develop reading for both learning and pleasure. However, this process is not established as discrete steps but as an integration of all the following skills via explicit instruction in: phonemic awareness, phonics, fluency, vocabulary knowledge, and text comprehension.

(Rowe, K., (Chair) National Inquiry into the Teaching of Literacy, 2005, pp. 11, 32)

To many of the readers of these reports and summaries, these generic terms carry considerable coded meaning, both in terms of what is meant and equally what is silently ruled out, what is *not-endorsed* by the use of such 'objects' as 'explicit instruction in phonemic awareness'. To many non-teachers, or readers unaware of the contestations that have gone on around the teaching and learning of reading and writing, such coded messages may seem bland or uninformative. They would be wrong.

A dilemma arises for researchers who know the codes and who wish to put such public statements to the test either empirically or theoretically. They want to ask, for example, 'to what specific practices do these terms refer and how can instances of them be reliably identified

in real-life teaching and learning settings?' For researchers, variations from site to site in, say, 'explicit phonics teaching' present simple, practical problems of identification and equivalence. How broad can these variations be and still count as the target practice, for example, 'explicit phonics teaching'? As a brief example, consider Transcripts 1 and 2 (Figures 7 and 8) as candidate examples of 'explicit/systematic code instruction'.

Figure 7: Transcript 1 – Teacher reading Year 3 students' stories about aliens

T	ONE DAY I WAS RIDING (.5) Don't forget when you add 'i' 'n' 'g' what do you drop?
S	Drop the 'e'^
T	Drop the 'e'\/ good-girl. ((reading from student's worksheet)) ONE DAY I WAS RIDING ON MY BIKE TO SCHOOL AND I CAME TO A CURB AN ALIEN JUMPED OUT I WILL TELL YOU A LITTLE BIT ABOUT HIM. That's fine, good.

(Freebody, data file)

Transcript explanatory note

Transcription conventions used in these and subsequent transcripts: T is teacher, S is student, F is father, C is child; UPPER CASE is utterance read aloud; (( )) is transcriber's or observer's comment; ' ' indicates the naming of the letter; / / indicates the phonetic sounding out of the letter; \/ ^ indicate downward and upward inflections respectively; (number) indicates time of pause in seconds; // indicates interruption; underlining indicates emphasis.

Figure 8: Transcript 2 – Father and son aged 5 years (first year of formal schooling) reading a storybook set for homework

1	**C**	NOW THERE WAS A BIG //
2	**F**	//No no no, this part here says /b/eaut/
3	**C**	BEAUTIFUL
4	**F**	Beautiful, that's right.
5	**C**	NOW THERE WAS A BIG (2)
6	**F**	Sound the letters (.5) /c/
7	**C**	COLOURFUL
8	**F**	No 'c'all 'd'
9	**C**	CALLED
10	**F**	What's this?
11	**C**	's'
12	**F**	Yeh 's'. 's' 't' says?
13	**C**	/st/
14	**F**	/st/ what's that letter?
15	**C**	'r'
16	**F**	'r' it doesn't sound like an 'r' it doesn't say /rrr/ it sounds different here but look at these letters here 'r' 'a' 'w' what would (1) how would that sound? Raw, so /st/ raw /b/
17	**C**	berry^
18	**F**	Berry yes. So what is it?
19	**C**	STRAWBERRY ROAD WITH
20	**F**	No not with. /ch/ on the end (.5) which
21	**C**	WHICH WENT OVER THE HILL AND DOWN TO THE TOWN.
22	**F**	Mmhmm
23	**C**	IT HAS HOUSES
24	**F**	No no
25	**C**	IT HAD
26	**F**	Had\/ ((reading continues))

(Freebody & Freiberg, 2001, p. 228)

Note: See Transcript explanatory note in Figure 7.

The issue for this discussion is not so much how these transcript snippets may be evaluated as teaching and learning events, but rather to have them convey a sense of whether or not they qualify as instances of the concepts recurring in the recommendations from the summaries of research found in Figure 6.

In Transcript 1, for instance, we see the teacher interrupting her reading of a student's story to confirm a correct spelling, and in doing so, providing an explicit reminder of the rule governing the instance at hand – it is explicit, it is instructional, and it is ostensibly about the code of English script.

In Transcript 2 Father provides many instances of explicit correction. The session proceeded in the same format for a further 110 turns, about 9–10 minutes. Each of Father's interventions was precisely tailored to the problem displayed at that given moment. That contingency and attention to correctness appeared in this case, unlike in Transcript 1, to make the meaning of the text, for the reader and listener alike, seriously disrupted, or even irrelevant. This practice produces its own accumulating set of constraints. If the meaning of the story becomes unavailable, then questions, for example, about meaning or grammar become almost unanswerable. What are available for question and answer are the topics that have been relevant to the exchange to that point, in this case, the domain of the code. Father's interventions were occasionally procedural (e.g., turns 6 and 14), but they were mostly corrective, replacing Child's original reading with another (elaborated in Freiberg & Freebody, 1995). The maintenance of a 'story' was interactively impossible, and neither participant did or could draw out any significance from the storyline in the talk. As far as the participation structure is concerned, the session could well have dealt with a word list, with Father's authority as a code-breaker as the central resource. Freebody and Freiberg (2001) made the following comparison between this exchange and their corpus of classroom-based interaction:

> *This talk looks different from many of the routines practised by teachers in dealing with reading in classrooms, in which treatment of correct word-sayings was embedded within other kinds of interactional activities. [We] found a more fluid, guessing-game structure in mainstream classroom reading lessons, in which teachers co-ordinated students' differing degrees of competence in reading, by postponing closure and collecting possible answers. What was often found is the establishment and ongoing re-discovery of the teacher's text-interpretive authority as part of the task of the students.*

(Freebody & Freiberg, 2001, p. 227)

A distinct point to be made in the contrast of the two events shown in Transcripts 1 and 2 relates to the issue of the structure of the learning. For example, in Transcript 1, T provides a reminder of a rule that can be applied more generally than just the correction at hand; F, in Transcript 2, for the most part, corrects C's readings without drawing attention to any potentially generative new or already known patterns or rules of sound–letter–cluster regularities. Is this difference criterial to the notion of 'instruction' as it might operate in these cases? F and C clearly separated the learning task at hand (the code) from its context in an ongoing story. In comparison T's intervention is apparently incidental to the question of code, but rather embeds the code learning in an ongoing interest in the meanings of the students' stories. What counts, for the researcher, the parent, the teacher, the teacher educator, and the policy maker, as 'explicit phonics teaching'? A particular practice can be recommended and even legislated upon, but variations in actual classroom practice conducted in its name may be substantial and consequential, and those variations cannot be simplistically set aside by researchers wishing to influence that practice.

Methodological issues involved in the analysis of classroom interaction data have been thoroughly discussed in the educational literature (Edwards & Westgate, 1994; Freebody, 2003; Ladwig, 2007). One pertinent conclusion is that there is a need for categories used in coding to be regularly revisited in light of qualitative analyses of classroom activities in the growing range of naturalistic settings.

Literacy in classrooms

In Desrosières's terms, there are two ways of approaching an answer to the question 'what counts as good literacy teaching?'. One is to determine a priori what will count from occasion to occasion and from site to site as instances of any given recommended practice, say, 'explicit/systematic code instruction', and to make a judgement on each candidate instance.

The other approach is to consider how the events work for the participants. That is, how they build up, through events such as these, a shared understanding of what will count here and now as learning about reading and writing, and how such shared understandings might or might not seem to satisfy policy or syllabus requirements. This is an approach that acknowledges local contingencies and the open-textured nature of the target behaviours of policy and syllabus. It also relates to how the learners themselves orient to 'rules' or 'policies' (a syllabus, a teaching method and so on) as they engage in and experience the teaching and learning of reading and writing. As Heap put it in the case of reading:

> *What counts as reading, procedurally, is whatever parties to a setting are apparently justified in believing to be the case about what reading is, what the skills of reading are, and how well any of the interactants performed. An interactant learns what reading is, how it is done, and what counts as reading, criterially, by paying attention to what counts as reading, procedurally, in particular situations ... whatever the teacher permits to pass, uninterrupted and apparently unchallenged, as an adequate display of reading skill, counts, procedurally, as adequate, until further notice.*

(Heap, 1991, pp. 128–9)

This is not to say that any coherent instance of classroom teaching and learning reading will be found to be adequate in another setting; it is to say that students do not encounter an 'essence of reading', but rather they learn about what reading is from participating in a series of interactions.

A critical set of understandings arising from the detailed study of reading and writing lessons in classrooms is that such instruction must, at the same time, function effectively as a format for managing the bodies and attention of a large group of not always inert or attentive young people and, in some cases, people with little experience of schooling. If the basic managerial functions of the participation structures are ineffective – if the talk does not work simultaneously as management – then a classroom lesson simply does not occur. For instance, if the participation structure found in Transcript 2 were found in a classroom, it would almost certainly be conducted by T and several students, not just one, if only for the purpose of achieving classroom management goals.

As a consequence of the setting being one of classroom teaching, T would need to call upon different students to read aloud, assuming that all are following the sequence correctly and that all are witnessing and learning themselves about the actual corrections and the kinds of strategies applied to the various code-breaking problems presented by different words to different student. The familiar Round Robin reading session would almost certainly call for additional regulatory work on T's part, as is instanced in Transcript 3 (Figure 9).

Figure 9: Transcript 3 – Year 3 students writing stories and reading them to Teacher

1	**T**	Okay what is this book called?
2	**S(s)**	LOOK FOR ME
3	**T**	So what is this story meant to be about? Andrew?
4	**Andr**	Someone was looking and hiding^
5	**T**	Perhaps, it might be, let's have a look. LOOK FOR ME. MUM LOOKED FOR DAVID IN THE TOY BOX. 'NO HE'S NOT IN HERE' SHE SAID. Now Chloe can you read the next bit please?
6	**Chl**	SHE LOOKED OUT (.5) OF ((reading error)) FOR HIM UP (2)
7	**T**	Something we haven't really got in our houses, it's a::a^
8	**Andr**	chimney
9	**T**	Chimney, very good Andrew. SHE LOOKED FOR HIM UP THE CHIMNEY and what did she say?
10	**S**	NO
11	**T**	'NO HE'S NOT HERE' SHE SAID. So he's not in the toy box
12	**Gr**	We're going to get a chimney
13	**T**	Are you, Graham? And he's not in the chimney. Okay, Alise?
14	**Al**	SHE LOOKED (1)
15	**T**	FOR
16	**Al**	HIM IN THE CLOCK.
17	**T**	She looked for him in the clock. Perhaps David's not a boy after all, perhaps he's something, a toy. She looked for him in the clock and what did she say Alise?
18	**Al**	'NO HE NOT HERE' SHE SAID
19	**T**	'NO HE'S NOT HERE' SHE SAID. Where did she look for him Ben Ashman, where did she look for him now?
20	**Ben**	SHE LOOKED FOR HIM IN THE (3)
21	**T**	Aah, ((points at picture in the book)) you know where he is already. 'NO HE'S NOT HERE' SHE SAID, 'WHERE IS THAT BOY?' Can you see the big speech bubble, that's a thing like this ((points)), it's a speech bubble. 'WHERE IS THAT BOY?' Rumbles from David under the mat ((said quietly)) 'HERE HE IS' SHE SAYS. (2) If we wanted to hide somewhere around the school, where would you hide, Ben?
22	**Ben**	ummm underground^
23	**T**	Hmm, yes \/ I think you probably would ((laughs))

(Freebody, data file)

Note: See Transcript explanatory note in Figure 7.

In this stretch of whole-class talk, T calls upon students to read excerpts from the book. She also needs to manage the allocation of turn-taking in ways that maximise the attention of those not reading at any given moment. The critical problem, at which many of the interactional choices made by T are aimed, is that not all students have the same level of reading ability or general world knowledge of the sort that might be called upon by the reading task (the chimney, for instance, in Turns 7–13). T's responses to the students' candidate answers are also often directed to the maintenance of attention, rather than strictly correction of errors or partial answers (as in Turn 5 'Perhaps, it might be, let's have a look'). So the participation structures that T needs to use reflect a different set of demands from those facing F in Transcript 2 in his dealings with a single learner. These differing demands affect the nature of the new knowledge to be learned via any given event, its clarity, how it can be made available and practised and so on. However much T or F may take into account the relevant research on the topic, they must relate directly to the interactional demands of the site and how those demands can be worked in such a way as to produce a learning event. These demands are not the same as those that

obtain in a laboratory (or in a classroom temporarily reconstructed by researchers). Yet they critically inform how it is that conclusions from laboratories might be acted upon in standard teaching and learning conditions.

The more careful the documentation and the more familiar the activities under study, the more the analyst is able to work on, as Macbeth put it, the 'respecification of familiar affairs' and maybe even come to 'know them differently' (1996, p. 281, and also 2003). Freebody and Freiberg (2006) made the case for the continued significance of exploratory, careful observational research on literacy in classrooms on the basis of its capacity to:

> *afford the discovery of unforeseen relevances, newly articulated or untheorized educational phenomena, or new levels of system and pattern in familiar educational activities.*

(Freebody & Freiberg, 2006, p. 709)

Therefore, the research needs to include careful descriptive documentations of current practice in any comprehensive research base, in order to be able to inform the teaching and learning of literacy in schools. Otherwise, the research is aiming to reform phenomena in evolving contexts about which it has not bothered to systematically inform itself.

With regard to a concept as variable and as consequential as literacy education, the community of researchers has responsibilities to validity at the levels of both local contingencies and broad policy imperatives. Freebody and Wyatt-Smith (2004) have termed these 'site' and 'system' validity respectively, and have argued that the tension between those two forms of responsibility is a central force for creativity, including increasingly creative notions of rigour.

Theorising and organising the research: The Four Roles Model

In selecting the research discussed in Section 3, a model of reading elements, as outlined in Table 2, was used as the base for the rest of this review paper.

Table 2: Four Roles of the Reader

Role's Name	Focus	Examples
Code-breaker	Knowing about and using the nature and contents of the relationship of spoken sounds in the language to the graphic symbols used to represent those sounds, and basic visual aspects of textual formatting	Sound–letter correspondences, phonemes relevant to English, punctuation, decoding the elements and structural compositions of pictures and graphic displays, hotlinks on web pages
Text-participant	Knowing about and using the meaning patterns operating in the written texts, participating in the ongoing construction of the text's meaning as a collection of propositions	Participating in the stated and unstated patterns of information that hold the text together, including vocabulary knowledge, and capitalising on syntactic knowledge to build a representation of the significance and implications of a text
Test-user	Knowing about and using the social and cultural functions of various kinds of reading and writing practices, building into a repertoire of purposeful and effective communications	The form–function relationships of various genres and the sociocultural, positional expectations associated with different kinds of written and visual communications
Text-analyst	Entail knowing about and using the cultural and ideological bases on which texts are written and put to use to mobilise opinion and standardise interpretation	How texts differentially position readers, and how they use various sociocultural categories, evident in linguistic and visual media, to constrain interpretation and influence the reader

(adapted from Freebody & Luke, 1990; Freebody, 2004; Luke & Freebody, 1997, 1999).

These four interrelated domains of literacy capabilities have been in general circulation for over a decade and the model is recognised in English in syllabuses and/or literacy framework documents in most Australian states and territories. Its original aim was to provide an accessible and inclusive framework for discussions of literacy education, while at the same time affording a range of pedagogical strategies and frameworks for teaching literacy and for understanding various disciplines' orientations to literacy education.

Section 2 has demonstrated and argued that even a cursory glance at a selection of research on literacy education indicates how thoroughly research on this topic both informs and has been informed by theoretical, methodological and policy developments and debates. The points earlier about documenting sites of literacy teaching and learning suggest that it is also the material and institutional settings in which literacy education it taken to be occurring, and how these settings are or are not represented in research, that come to set the borders on our appreciation of what effective literacy education can and should be. The sample of research summarised in Section 3 largely concerns code-breaking and text-participant resources. Occasional reference is made to other aspects of literacy learning, but the bulk of research and the most heated and uni-dimensional debates concern these resources and the significance they assume in the early years of schooling.

section

3 Teaching and learning the codes of English texts

In a series of close observations, Ninio and her colleagues (Ninio, 1980, 1983; Snow & Ninio, 1985) showed that, some time toward the end of the first year of life, infants who have been around reading adults stop biting books, waving them around and throwing them at siblings. They begin, instead, to treat them as a special kind of object that puts a special set of communicational pragmatics on offer; they begin to 'see through' the book toward some communicational potential. We can name four such moments in which the material object of attention – the book, or paper, or screen – evolves, for the developing reader, from a material, quasi-natural object toward a cultural object. To be a reader is to see through a material object toward an understanding that it contains a communication of some sort, to see through that communication, to regard it as a representation of language, to see through that representation in turn toward an appreciation that this language is textually organised, and to see through that textual representation toward an understanding that these texts embody and afford a set of cultural contents and practices (Freebody & Freiberg, in press; Heap, 1979, 1985).

The following transcript illustrates how these processes of 'seeing though' come to act themselves out in teaching and learning settings. The scene is the waiting room at a clinic, and Mother has asked William, aged 2 years and 9 months, if he would like to read a book with her. William has brought Mother a book from a pile of books on the table.

Figure 10: Transcript 4 – William, Mother, and 'saying' the book

1	**M**	This one? What's this one? (2) ((M pointing to word; W holding book)) Say it.
2	**W**	Colour (.) one ((starts leafing through book))=
3	**M**	=coloured one (1) but what is it? (1) Caterpillar?
4	**M**	ca/h/pilluh^
5	**M**	Ye:es it 'tis too. What does it say? ((turns back to first page))
6	**W**	A/h/pool (1)
7	**M**	It's an apple (1) but what does it say? (2) ONE DAY ...
8	**W**	((quietly)) (nn) day// ((looking at M))

9	**M**	//What does it say?
10	**W**	I don't know
11	**M**	Would you like Mummy to read you the words?^=
12	**W**	=They don't need words. (1) ((loudly, pointing to writing at the bottom of a page)) There's only words^
13	**M**	Yes, those are words, but I think we start over at the front cover, don't we? ((pointing)) Start here (1) turn the page hmmm (.) turn another page (.) ((quietly)) that just tells us the name of the book. It's called THE VERY HUNGRY CATERPILLAR (1) ((pointing)) what's that?=
14	**C**	=don't know
15	**M**	It's a su:un. Now we read the words on this page, see? IN THE LIGHT OF THE MOON A LITTLE EGG LAY ON A LEAF (1) look at it little egg on the leaf ((quietly)) do you want to put it on the table or not? (2) Now what do the other words say? ONE SUNDAY MORNING… ((reading continues))

(Freebody, data file)

Are Mother and William trying to carry off a 'joint reading session' or a 'reading lesson'? Clearly, William could see through the book as a material object toward its communicational potential. For him, however, the pictures were enough for his participation in a 'reading'; but, for Mother, this was to be a reading of the words.

The participants in this event negotiated a division of labour, but not without a little struggle. At Turn 11, Mother asked William if she should take over the reading of the words, and he responded with Turn 12. We can hear this as an attempt to prevent Mother's taking over of the reading through an observation about the largely pictorial contents of the books – to open up William's options for taking part. But Mother did not treat it as a resistance to the beginning of *her* reading and proceeded to take over the reading activity.

For William, there is a technical term being used here on which the participation structure for this event hinges. A crucial and contested meaning in this interaction is the one that is to be attached to 'say.' Mother asked William to 'say' the words four times (Turns 1, 5, 7 and 9). It turned out that 'say' referred, this time, to the reading of the words, not the appearance of the book (Turn 2) the contents of the pictures (Turns 4 and 6) or the repetition of the words Mother had just said (Turn 8). William tried all of these latter options before conceding that he did not know (Turn 10). What counts as 'saying' is the pivotal question for the interaction as it proceeds. It is thereby a key problem for William and an educational focal point for Mother.

So to read is to know that text materialises sound, sound materialises language, language materialises textual activity in the world, and textual activities materialise cultural meanings and practices. The problems that learning to read calls upon are material (breaking the codes), semantic (applying and participating in the meaning structures of the text), sociocultural (using a text in its sociocultural context), and ideological (analysing the interaction of the text with the ideological position of the reader and the consequences for both). Working with these problems is what is acted out, for and with learners, in literacy learning settings.

In this section some illustrative research studies are drawn together to give something of the history of research into how educators do, can and should teach young people to crack the codes of English so that they can understand as they read, and so that they can understand and participate in a literacy-saturated and literacy-dependent society.

Introduction to defining 'code-breaking' resources

In beginning this process, we set the context for the codes of English and their idiosyncrasies with a brief glance at other languages. In approaching the physical materials of learning to read and write print, a first and most obvious point is that scripts show variation across the world's languages (DeFrancis, 1989). Languages differ not just in the contents, the preferred articulation and meaning potential, of each symbol, but moreover in the principles that guide

the relationship of a sound to an inscribed sign (the 'grapheme–phoneme correspondence', or GPC, as it is called). Language scripts can be laid out on a continuum from, roughly, pure alphabetic (e.g., Bahasa Indonesia) through alpha-syllabic (e.g., most Dravidian languages in India) through to logographic (e.g., Chinese). English is toward the alphabetic end of this continuum, but also presents levels of morphological organisation in its script – units within words that have meaning and that are often 'regular' only at that morphological level. The direct implication of this is that languages at different points on this continuum call upon different kinds of teaching and learning activities.

The relationships between languages and their scripts can be further characterised as transparent or 'deep'. Deep or non-transparent language–script relationships are often observed in elderly scripts that may originally have had some transparent GPC logic but that have lost that transparency simply because spoken language changes faster than written language. Greek is an example (Joshi & Aaron, 2006). The histories of some languages and scripts may be very long indeed, as in the case of Chinese, but some make up for a lack of direct descent from ancient origins with voracious borrowing – morphemes, words, expressions, and even occasionally grammatical formations. The linguistic acquisitiveness of some cultures has resulted in collections of contrasting sound–script logics in the one language. English is a good example of this category and its many variations in logic partly reflect different features of its borrowing history and the period in which the acquisition occurred (Baugh, 2002). For example, *ship*, *skipper*, and *skiff* were borrowed at different times when different pronunciation preferences prevailed (in this case, about /sk/ versus /ʃ/and /f/ versus /p/), or borrowed directly and then later indirectly via an intermediary broker language (in the case of *skiff*).

An interest in literacy leads us to an interest in these varying GPC logics and to the educational implications of these variations. The history of Chinese script offers a strong contrast to anchor that interest, reflecting as it does a compositional logic different from those generally applying in English. Figure 11 provides an example of this logic in word construction.

Figure 11: Constructing 'cat' in Chinese script

Chinese script is composed of characters, quasi-pictorial units that produce meaning on the logic of morpheme-vocabulary units. The character 猫, for instance, means 'cat' and is pronounced 'maow', with a slight nasalisation and flat tone. The character is composed of three elements:

 is the base and means 'field' and is pronounced 'tien'

 is the upper radical and indicates relevance to vegetation

 These two together mean 'plant shoot', a compound pronounced 'miaow'.

 is the third component, the left radical, and indicates a living thing or animal.

The fact that the combination of these vague, evocative semantic components is 'read' as 'maow' illustrates the observation that:

> *a remarkable number of characters, known as compound characters, contain radicals that function as impressionistic sound and meaning cues.*
>
> (Cheung, McBride-Chang, & Chow, 2006, p. 434)

Reading Chinese is not just about learning the sounds and meanings of the ideograms, but also trading on this 'impressionistic' feature, a feature often named as the cause of the rote

memorisation approach to reading acquisition in Chinese settings, at the expense of generative, 'self-teaching' resources on offer in more transparent phonemic/alphabetic-based language-scripts (as argued, for example, by Share, 1995). These instructional differences, and the cognitive and semiotic practices they call upon and help to grow, are influenced by the simple material features of the code. The argument is that these simple, historically determined features of the 'stuff' of literacy can have consequences for learners' journeys as they work their ways into literate social practices (a position developed with regard to several languages in Joshi and Aaron, 2006).

The notion of transparency, or seeing through, is more than metaphorical. It is clear that when an individual moves from seeing marks on a page to seeing that there is some attempt to represent talk, an orthography, a moment of transparency has arrived in that person's literacy development. DeFrancis (1989) described English as a morpho-phonemic script (along with French and Korean) in that it employs a 'slippery' combination of phonemic and morphemic correspondences (as elaborated by Halliday, 1985). English has *wombat*, but it also has *woman*, *womb* and *women*; it has *cat*, but also *cater*, *catch*, *catholic* and *cathedral*.

Mapping that slippery combination is further complicated by the fact that twenty-first century English is a global family of languages whose members share resemblances rather than identical attributes. The nomination of one of these family members as 'foundational', 'standard', or 'received' has not only ideological significance; it is a cultural power grab that allows policies and syllabuses to be written. This nomination of a standard form opens an apparently solid space for educational policy and curriculum development that has real and durable consequences for speakers of English who speak it differently. For instance, Table 3 shows the 44 sounds generally attributes to 'standard' spoken English, the sounds that the 26 letters of the English script represent.

Table 3: The 44 sounds of standard Australian English

Consonants	Full vowels	Closed vowels
/p/: **p**it	/ɪ/: b**i**d	eɪ/: b**ay**
/b/: **b**it	/ʊ/: g**oo**d	/ɔɪ/: b**oy**
/t/: **t**in	/ɛ/: b**e**d	/əʊ/: t**oe**
/d/: **d**in	/ʌ/: b**u**d	/aɪ/: b**uy**
/k/: **c**ut	/æ/: b**a**t	/aʊ/: c**ow**
/g/: **g**ut	/ɒ/: p**o**t	/ɪə/: b**eer**
/tʃ/: **ch**eap	/i/: b**ea**d	/ɛə/: b**ear**
/dʒ/: **j**eep	/u/: b**oo**ed	/ə/: ros**e**s (reduced)
/m/: **m**ap	/ɜː/: b**i**rd	
/n/: **n**ap	/ɔː/: b**ough**t	
/ŋ/: ba**ng**	/ɑː/: f**a**ther	
/f/: **f**at		
/v/: **v**at		
/θ/: **th**in		
/ð/: **th**en		
/s/: **s**ap		
/z/: **z**ap		
/ʃ/: **sh**e		
/ʒ/: mea**s**ure		
/h/: **h**am		
/ʍ/: **wh**ine		
/w/: **w**e		
/ɹ/: **r**un		
/j/: **y**es		
/l/: **l**eft		

(adapted from the International Phonetic Association, 1999, *Handbook*).

English code as a teaching resource

Many ways of making legitimate sounds in the English language are omitted from this table. Not rating an appearance, for example, are the Scottish guttural-aspirant, as at the end of 'loch', the rolled 'r' used in some Asian-based forms of English, and much more besides. While these omissions might be caricatured as remote tribal dialects by some, the glottal stops used by some residents of southern England (and other places), such as when they say 'Brighton' as /braIʔn/, are closer to the language's historical heartland. These are distinct sounds, but there are also significant differences in the gradations of sounds, such as in the vowel variations among standard forms of Australian, New Zealand, and varieties of North American English (*sex*, *six*, *sairx*, and *say-ex*) that are not easily represented in the list of canonical sounds shown in Table 3.

Understanding the instability of the code as a general description of English constitutes the beginning of a larger set of understandings about the instability of the relationship between language use in general, the dominant forms of interpretation, and the cultural practices and politics that surround them. That the apparent stabilities exemplified in Table 1 permit an official schema for code-breaking is no more based on natural realities than is the selection of literary texts deemed to be worthy of inclusion in the senior school or university English curriculum, the 'canon'.

So an initial question for teachers and researchers of English literacy relating to the breaking of the codes is: What are the material peculiarities of contemporary English script and what might be the implications of those peculiarities for the teaching of reading and writing? Just from Table 3, and even if we knew little else about the language, we would hypothesise that teaching the GPC of English, compared to teaching a perfectly transparent and consistent alphabetic/phonemic language or a logographic/pictographic language, is far from straightforward.

Debates about the teaching and learning of the code have often been caught up in, and sometimes confounded with, the question of whether or not English is sufficiently transparent and consistent for a straightforward 'code training program' to be effective among novice learners. How well behaved is the GPC of English? In their computational study of school textbooks used in the United States of America, for instance, Carroll, Davies and Richman (1971) in their *American Heritage Word Frequency Book* found that about 100 distinct words accounted for half of all written text in their five-million word corpus. They found that many of these 100 were both function words rather than lexical or content words, and that many of them were 'irregular' or 'marginal' in their GPC. For instance, here are the most common 10 words, a group that accounts for about one-quarter of everything written in these books: *the*, *of*, *and*, *a*, *to*, *in*, *is*, *you*, *that* and *it*. Without knowing the history of debates in literacy education, then, we might make the prediction that there would be debate or at least fluctuation around the question of preferred teaching approaches and learning sequences. And, of course, we would be both right and putting it mildly.

The sections that follow describe some of the foundational studies in education in breaking the material codes of English, a small selection of more recent attempts to study this topic, with a preference for studies offering some longitudinal insights, and some issues, problems and possible directions for further research.

Foundational work on breaking and using the code

In Section 1 the ground-breaking research on reading by E.B. Huey was summarised. For all his ardent engagement with his topic and his impulse toward an almost extravagant encyclopedism, Huey managed something done rarely enough at the time and not too often since; that is, he kept one eye steadily on the research and one on the practitioner, resulting in the comment by one of the book's earliest reviewers that the book showed a 'tempered yet progressive mixture of science and practice' (Buchner, 1909, p. 149, cited in Venezky, 1984, p. 8).

Huey's landmark work emerged at a moment when the rift in the emergent discipline of psychology between German introspection, behaviourism, and William James's pragmatism was beginning to appear, but had not yet divided and polarised the entire field. So, significantly,

what was possible in the human sciences, particularly as practised in Anglophone countries, was less restrained than it was to be for many decades to follow (Hothersall, 2003). This was a time when ideas such as 'what children are doing as a social community' were theoretically respectable enough to be put in front the editors of scientific journals and even policy makers, and when schooling was broadening its demographic catchment and curricular ambitions. By the time the next major public review of research on the teaching and learning of reading occurred in the 1960s, 'research' meant something much more specific. The clients of schools had become culturally more visibly diverse, and the range of concepts surrounding reading and writing that had policy traction had almost entirely dwindled to 'code' versus 'meaning'.

The great debate

By the time Chall published *Learning to Read: The Great Debate* (1967), the teaching and learning of reading and writing, in the United States of America and elsewhere, was beginning to be drawn into public discourses about socioeconomic mobility, international economic competitiveness, and internal cultural cohesion. One result was that programmed and packaged literacy education had become a budding market commodity, serving a resolutely industrial model of schooling. Equally, however, this was a time of theoretical disturbance, when behaviourist approaches to the study of human behaviour were under challenge in Western societies from recently emerging cognitive-science approaches (Royer, 2005), as well as from more humanistic reasoning about the nature of childhood and 'progressive' educational practice. This was the era of increased government responsibility for educational disadvantage (Kantor, 1991) and of the 'free school' movement (Miller, 2002), based on 'a politics of authenticity which insisted that social change must address existential wholeness as well as social reform' (p. 76).

Chall reviewed many hundreds of research papers that directly compared what she took to be the two dominant teaching approaches at the time – those with a code emphasis (a focus on foregrounding GPC as the driving edge of reading acquisition) and those with a meaning emphasis (a focus on dealing with meanings of texts, with more incidental initial treatment of GPC and a tolerance of guessing errors). Chall outlined the general conclusions she felt were warranted by the bulk of the reliable research. First, she concluded that the research supported the view that:

> *code-emphasis is central to the effective teaching of reading … at our present state of knowledge … a code-emphasis – one that combines control of words on spelling regularity, some direct teaching of letter–sound correspondences, as well as the use of writing, tracing, or typing – produces better results with unselected groups of beginners than a meaning emphasis.*

(Chall, 1967, p. 307)

She further noted:

> *many people are pinning their hopes for helping culturally disadvantaged children to read better on a change in content rather than in method … our inquiry indicates that the reading standards of culturally disadvantaged children can be improved by a change in method. The evidence points to a code-emphasis start for them.*

(Chall, 1967, p. 311)

Chall directly responded to the growing criticism of code-emphases, that it taught children to 'bark at print' (Goodman, 1986) rather than develop in them a sense of the meaningfulness of reading:

> *The long-existing fear that an initial code emphasis produces readers who do not read for meaning or with enjoyment is unfounded. On the contrary, the evidence indicates that better results in terms of reading for meaning are achieved with the programs that emphasize code at the start.*

(Chall, 1967, p. 307)

Chall's second conclusion asserts a belief that being 'central to the effective teaching of reading' does not make code-based teaching a sufficient basis of a literacy program:

> *Endorsing a code emphasis should not imply an abandonment of reading-for-meaning … I recommend a code emphasis only as a beginning reading method – a method to start the child on – and that I do not recommend ignoring reading-for-meaning practice.*

(Chall, 1967, p. 307)

Two problems had already emerged by the time Chall compiled her review. The first concerned the ambiguity of terms such as 'central' and 'important' in scientific argumentation. It is clear that Chall did not intend 'central' to mean 'sufficient', but rather 'necessary'. This left unanswered, and still does, the question of what other kinds of approaches to the teaching of reading and writing might be needed. It further opens a new question: When the code is securely in place, is there guidance from research on reading, about what to do next, apart from teaching 'reading-for-meaning'?

A second problem relates to an understanding of the teaching of reading as the teaching of reading acquisition. As with any other complex skill, a successful acquisition phase is important, otherwise remedial resources need to be put into place in institutional formations, in our case, schools, that are not well suited to 'out-of-phase' or 'out-of-their-room' clients. The applicability and significance of the findings from reviews such as Chall's depend on a shared understanding of what the supporting institution is capable of in its normal running. Poor starts mean ongoing difficulties only if the support systems cannot accommodate diverse rates of progress.

Chall reminded practitioners and researchers that the selection of a code- or meaning-emphasis approach to teaching is not a substitute for quality in that teaching:

> *My belief that the choice of beginning reading method is important does not lessen in any way my conviction about the importance of good teaching.*

(Chall, 1967, p. 308)

Nor are the researchers exempt from becoming part of the problem. Chall was concerned at what she saw as the idiosyncrasy of many studies and the need to build cumulative knowledge in the area:

> *Reading research needs to reflect a coherent development of knowledge. My final recommendation is that experiments in beginning reading not be undertaken as if they were the first studies of their kind. Research in reading should follow the norms of science. Each researcher must try to learn from the work of those who preceded him [sic] and to add to a unified body of knowledge – knowing that neither he nor anyone following him will ever have the final word.*

(Chall, 1967, p. 314)

Like Huey, Chall concluded that in disputes between practitioners and researchers, it was always the researchers who had not only the tools to evaluate contrasting approaches, but also a sufficiently grounded understanding of those approaches, as they were played out across the sites of a system, to take that decision upon themselves in the first place. By the 1960s, the politics of teacher–researcher relations were beginning to become entrenched, as the perspectives, wisdoms and technical capacities of each group began to vie for the attention and influence of policy makers. This opposition, often posed as 'the norms of science' versus 'the guild knowledge of practice' continues to fuel debates in the field.

Chall's review had the possibly unintended consequence of problematising teachers' knowledge and unquestioningly privileging the standpoint of a particular sector in the educational research community. It also set in place a view that the only choice available to teachers of early years literacy was between code- and meaning-emphasis. This is a dichotomy that continues to stultify debates and divert the attention and effort of generations of teachers and researchers.

Psycholinguistic approaches

Arising directly from the research summarised by Chall have been lines of research and theorising under the general heading of 'psycholinguistics' and focused on the significance of phonemic awareness in the early acquisition stages of learning to read. Here the work of Brian Byrne (as summarised in Byrne, 1998) is a well-developed and coherent example. For many years, Byrne and colleagues have pursued a number of findings from their research. One of these is that knowing discrete units of phonemes and letter–sound correspondences in English generalises to better reading performance and enables other lines of improvement. Further, knowing phonemes and letters, they argued, has three components:

> *A child who knows how to read a small group of words that differ in just a single letter will understand the role of those letters in unknown words if he or she also knows the following: (a) that the phonemes these letters represent are separate segments in their respective words, (b) that the same phonemes also occur in other words, and (c) the particular association between the distinguishing letters and phonemes in the known word group.*

(Byrne & Fielding-Barnsley, 1989, p. 320)

Byrne's experiments confirm what many early childhood teachers know, that there are significant individual variations in young readers related to the development of understanding of GPC (1989). Byrne has argued and demonstrated experimentally that knowing phoneme identity is a generalisable skill that transfers to other settings, new words and new letters and sounds (1991, p. 454), and that alphabetic knowledge and phonemic awareness both need to be taught and should be taught together (Byrne & Fielding-Barnsley, 1991, 1995).

Finally, in various research reports, Byrne has argued for a strong relationship between superior decoding skills and reading comprehension:

> *The most prominent finding in this follow-up investigation is the continuing superiority of the children from the experimental condition in decoding, as measured by accurately reading pseudowords, and signs of superiority in reading comprehension.*

(Byrne & Fielding-Barnsley, 1995, p. 496)

Clearly this relationship between decoding and comprehension could be because of the better decoders' ability to capitalise, earlier and more productively, on evolving comprehension-related pedagogies going on in the classroom or home. That observation does not alter the significance of the point, but rather it does leave unattended the question of the unique contribution of decoding to current or later comprehension.

The relationship between decoding and comprehension implied, but never fully explored or challenged, in both Chall's review and Byrne's research is simply that fluent decoding 'enables' understanding in reading, and that therefore teaching reading presents merely technical questions about phonemic awareness and the GPC of English. This has been termed 'the simple model' by one of its principal advocates, Juel (1988). This model postulates that, once print is rendered into speech (voiced or not), it is understood as readily and 'naturally' as speech.

Matthew effects

A further foundational line of work that is useful in understanding current debates about literacy education derives from research by Stanovich (1986). Stanovich and colleagues have argued that the knowledge and skill bases that inform and guide reading and writing development are in constant interaction, and so can mutually support and enrich one another (e.g. Stanovich & Cunningham, 2004), leading to growth that seems accelerated in terms of any of the components individually. This important line of argument has been encapsulated in the expression 'the Matthew effect', a reference to the notion that 'the rich getting richer and the poor get poorer'. Stanovich illustrated the point with regard to vocabulary:

> *If the development of vocabulary knowledge substantially facilitates reading comprehension, and if reading itself is a major mechanism leading to vocabulary growth – which in turn will enable more efficient reading – then we truly have a reciprocal relationship that should continue to drive further growth in reading throughout a person's development … [so] … An analogous Matthew effect in reading arises from the fact that it is the better readers who have the more developed vocabularies.*

(Stanovich, 1986, p. 381)

A crucial point for Stanovich relates to the observation made by Huey that the practical social world of the child is significant for an understanding of differential success in reading and writing development. Stanovich noted that skilled readers themselves build up and are in turn developed by the literacy environments that support and facilitate more literacy growth, and that this is less so in the case of less skilled readers. This is a finding also supported in a number of subsequent longitudinal studies (Leppanen, Aunola, & Nurmi, 2005).

> *Children who become better readers have selected (e.g. by choosing friends who read or choosing reading as a leisure activity rather than sports or video games), shaped (e.g., by asking for books as presents when young), and evoked (e.g., the child's parents noticed that looking at books was enjoyed or perhaps that it just kept the child quiet) an environment that will be conducive to further growth in reading. Children who lag in reading achievement do not construct such an environment.*

(Stanovich, 1986, p. 382)

The notion of 'lag' is posited in this line of work as only one of a number of possible causal factors in the development of reading and writing difficulty. Stanovich argued that Matthew effects do not account for all readers who were struggling, and that this fact itself caused difficulties in differentiation. Learners with difficulties or disabilities arising otherwise required, in Stanvovich's view, distinctive kinds of support.

Stanovich did not, however, regard each of the component skills and knowledge bases involved in reading as having equal salience in the overall process. The negative Matthew effect – 'the poor getting poorer' – he argued, and demonstrated with a series of experiments, more often than not begins with a lack of phonological awareness:

> *I have hypothesized that if there is a specific cause of reading disability at all, it resides in the area of phonological awareness. Slow development in this area delays early code-breaking progress and initiates the cascade of interacting achievement failures and motivational problems.*

(Stanovich, 1986, p. 393)

One of the more noteworthy aspects of Stanovich's position is that it neither locates the causes of reading difficulties solely or even substantially in schools, nor does it imply that these difficulties can be overcome solely within school contexts:

> *Solutions within school may be limited in their success because of the effects on children's reading development outside of school … a major problem for future research will be to determine whether instructional differences are a factor in generating Matthew effects.*

(Stanovich, 1986, pp. 392, 396)

The story so far

We can see that what had been established by researchers up to about 1990, in terms of both theory and reliable experimentation (very little of it in naturally occurring classroom settings, but nonetheless widely replicated across demographic formations) is:

- that many young readers in the early years of schooling need explicit instruction in alphabetic knowledge and in the particular form of phonemic awareness, separately and together, called upon to encounter English script
- that these contribute distinct variance to the improvement of early reading
- that these are not a substitute for instruction in resources related to comprehension; but
- that they do position a student well to capitalise on the learning experiences directed at the development of other literacy resources (such as comprehension, mastery of a repertoire of text types and so on).

What has also been established is that the curricular expectations operating in early childhood education, and the pedagogies that embody those expectations, are critical variables in accounts of difficulties in reading and writing in school. The assumptions in play here are:

- that there is a sequence and a tempo in the journey young learners take as they acquire reading and writing
- that, at different points, qualitative transitions into new learning domains are expected to occur, one whole classroom-full or even one whole system-wide or nationwide cohort-full of children at a time
- that students not moving in the expected sequence or at the expected speed will encounter consequences of exponentially increasing severity without some significant interventions
- that interventions will need to deal as well with the layers of defence and avoidance that many students will put into place every day to negotiate schooling.

What the research showed less well, up to the 1990s[3] is the longitudinal consequences of various kinds of early literacy education settings and experiences. These settings and experiences include the role of new digital technologies, and the place of writing in early learnings about code-breaking. In the following sections of this review, these topics are briefly illustrated.

Chall's plea 'that experiments in early reading not be undertaken as if they were the first studies of their kind' has not been unfailingly heeded by her successors. Many of the studies encountered while reading for this review are conceptually trite, repetitive, to all intents and purposes, of earlier studies, or so limited in their theoretical scope and practical benefits that they yield little for educators working with a concept of literacy beyond letter or word reading. Further, many studies show the effects of some graduate school policies on the conduct of literature reviews that deem any research older than ten years to be certainly stale, possibly not well theorised or designed, and probably wrong, or, at best, only accidentally right. In scanning the still growing research literature broadly, it is clear that recent policy developments have led to even more studies establishing, yet again, some basic propositions about how children do and can learn aspects of English written code and GPC when they are taught, and that, when taught in even more concentrated and intensive ways, they can often learn them even better.

Selection of current research

This summary of a selection of current research is based largely on school education, on comparatively recent research, and on those studies that aimed either at making a serious advance on earlier understandings about the teaching and learning of reading and writing or at troubling those 'received' understandings. The discussion that follows also aims to avoid repeating studies covered in recent large-scale reviews, and, in some cases, to provide some additional facets to the conclusions of those reviews. The choice of studies has taken account of the principled structure and conduct of the research, along with the breadth of possible implications for the discussion built up so far in this review. The intent is to summarise research projects but, at the same time, to give enough detail concerning the participants, the design,

[3] Summaries of some of the foundational code-breaking research can be found at http://www.projectpro.com/ICR/Research/Phonics/Bibliography.htm retrieved on 7 July 2007.)

the data collected, and the findings to allow the reader to at least locate and maybe critique a study (theoretically, demographically and so on).

Learning print literacy

An ongoing interest in the research literature on literacy learning and teaching in the school years has been in the relationship of preschool and prior-to-school experience to literacy learning in school. As an example, Raban and Coates (2004) reported on a longitudinal and experimental study aimed at documenting the possible effects of engagement in a preschool literacy project on socioeconomically disadvantaged students' reading skills in their early years of schooling. Raban and Coates collected data on over 900 students, some of whom had attended schools participating in the *Preschool Literacy* project and some of whom had not, but all went on to schools participating in the *Early Literacy Research* project in Victoria, Australia. All of these preschools and schools served social, economic and educationally disadvantaged areas.

The *Preschool Literacy* project schools were characterised as having rich literacy environments, providing opportunities and encouragement for writing, emphasising purpose in reading and writing activities and creating an awareness of the conventions and structures of print. The students were assessed upon entry into school (but not preschool) on their oral language, their concepts about print, their letter and word identification, their writing vocabulary and their dictation skills. They were again assessed on these measures two years later.

Raban and Coates found the following:

- On entering school, students who had attended the *Preschool Literacy* project schools had significantly higher mean scores on concepts about print, letter and word identification, and writing vocabulary than students who had not attended the *Preschool Literacy* project schools.
- In their ability to read running text, however, this difference was not evident, the hypothesis being that this was because it had not been explicitly taught in the *Preschool Literacy* project school settings.
- The significant differences found between two groups appeared to have evened out somewhat on the assessments administered after two years, suggesting the need for more effective maintenance of early gains.

Raban and Coates concluded that providing preschool literacy exposure in disadvantaged areas allows students who may not otherwise experience direct literacy support to develop key skills before entering school, but that:

> *early literacy intervention that works for later success in school relies on two major assumptions: first, that pre-school children have access to a wide range of appropriate and culturally inclusive literacy resources, and second, that adults interact with children effectively in order to draw their attention to print, model and demonstrate print in daily use for a wide range of authentic purposes and answer children's questions, discussing all manner of texts with them*

(Raban & Coates, 2004, p. 27)

These assumptions clearly do not hold equally across the full range of backgrounds from which students enter Australian schools, nor have they ever, nor indeed will they ever. The question then becomes: What kinds of teaching in schools best copes with the variations in prior-to-school experiences in and around literacy?

In an attempt to document mixtures and 'pure cases' of code- and meaning-oriented teaching, early literacy instruction and learning across the kindergarten year (the first year of formal schooling) Xue and Meisels (2004) assessed the effects of different forms of early literacy instruction, in particular those implicated in decades of 'great debate' – phonics instruction and what they have termed 'integrated language arts' instruction. Xue and Meisels employed hierarchical linear modelling on longitudinal cognitive and literacy data based on a broadly based sample of 609 kindergarten children, drawn from in 2690 classrooms and 788 schools in the

United States of America. These analyses formed part of a larger program of research entitled the *Early Childhood Longitudinal Study* which examined beginning students' achievement based on a) cognitive tests focusing on literacy and language, b) teacher judgement on a general academic rating scale, and c) teacher judgement of approaches to learning on a social skills rating scale. Xue and Meisels were interested in establishing relationships between growth on these measures and teachers' instructional techniques, based largely on self-report, the social and socioeconomic backgrounds of the students, and the general characteristics of the teacher, the class group and the schools.

Xue and Meisels found, often in spite of the stated policies of the schools or the administrative regions, or even the syllabus guidelines, that phonics instruction and integrated language arts were moderately correlated with each other in this large sample of teachers. That is, code- and meaning-centred approaches were evident together in teachers' practices, with very few teachers drawing specifically from only one of them. The researchers' analyses were able to discern, however, that the different approaches made different contributions to students' literacy development; that is, that different resources were developed through the two approaches. Predictably, they found that phonics instruction assisted in the development of code-breaking knowledge, but functioned most productively when combined with language arts program elements. The conclusion was that students' achievement was highest when teachers explicitly incorporated the two techniques together in balanced and responsive ways.

> *In order to learn to read effectively, children need a balanced instructional approach that includes learning to break the code and engaging in meaningful reading and writing activities.*
>
> (Xue & Meisels, p. 222)

This study was unlike others that have compared 'phonics' to 'whole language' or 'language arts' approaches, such as those collected for the US *National Reading Panel* (2000) and the *Australian National Inquiry into the Teaching of Literacy* (2005). It sets out to document the interaction between these two general approaches and how they could and do work in relation to each other in actual classrooms over time. With regard to students considered at-risk and the intervention programs they should be offered, Xue and Meisels found that the effectiveness of the two approaches conducted in concert was not moderated by the socioeconomic status or ethnic minority status of the students.

Further, students who had begun their kindergarten year struggling with their reading and writing did not gain as much from integrated arts programs as did their peers. Entry levels are shown again to be significant for how well students can capitalise on interventions. This finding reinforces conclusions drawn from one of the few genuinely longitudinal research commitments in Australia, reported in Meiers et al. (2006). Over three years, they found that school-based differences were substantial predictors of literacy development over the first three years of formal schooling, but that, significantly, there was a wide range of literacy knowledge evident when students first entered school and that those differences continued to predict improvement in literacy knowledge.

The dubious security of the well-worn pedagogic distinction between skills-based and integrated language approaches or whole-language approaches as descriptions of classroom practice in early years schooling has been further troubled in a study by Dahl, Scharer, Lawson and Grogan (1999). Teachers who self-nominate as using a 'whole-language approach' have traditionally been characterised as neglecting the explicit development of code-breaking resources. Dahl et al. examined how, if at all, a sample of whole-language teachers working in urban and rural settings, serving a range of low- to middle- and high-income schools, actually taught alphabetic knowledge and phonemic awareness. They also tested whether or not the effects of these approaches were evident in the decoding achievements of first-grade students. Nine 'whole-language' teachers working with 178 children took part in the study. The researchers relied on detailed observation notes, audiotape transcripts of lessons and interviews based on many lengthy visits, and pre- and post-tests on phonics achievement.

Dahl et al. found that, in these whole-language classrooms, the code-breaking activities – focusing on phonological awareness, phonemic awareness and phonemic segmentations – constituted more than one-third of the total time devoted to reading instruction. Further, they found that:

- phonics skills were taught in tandem with strategies for phonemic analysis
- consonant and vowel patterns were taught in context with reading and writing activities, that is, using connected texts
- these teachers used writing as a key setting for code-breaking instruction
- teachers relied on the frequent use of ongoing individualised assessment and tailored instruction
- post-tests, using a range of both in-context and isolated reading measures, showed that, despite diverse abilities, almost all students successfully decoded words at Year 1 level or beyond. Those that did not nonetheless displayed similar progress, having started from a lower pre-test level, a finding directly supportive of Xue and Meisels' conclusions.

On the basis of these findings, Dahl et al. suggested a reconsideration of the claims of critics about whole-language and 'integrated' approaches, specifically that the teaching of phonics and other code-breaking resources are been partial, or peripheral, or incidental in such programs. These researchers concluded that the debate needs to be much more nuanced, more directly based on actual empirical descriptions of real classrooms, and more theoretically nuanced on the matter of literacy development, before it can directly inform teachers' practices.

The relationships among code-based and language or meaning-based teaching approaches in the early years of schooling has been further examined by Morris, Bloodgood, Lomax and Perney (2003). They attempted to specify the relationships more closely by focusing on word meaning as the key connection between GPC and textual meanings. They conducted a longitudinal study across kindergarten and first grade in an effort to map out the developmental phases that were in evidence – the progressions through different moments of 'seeing through'. Over 100 kindergarten students were assessed over the two-year period. These students were drawn from both affluent and lower-income white communities attending four schools. Each student was tested at five different points during their first two years of school on standardised forms of alphabet knowledge, beginning consonant awareness, concepts of word meaning and use in-text, phoneme segmentation, word recognition and reading in the context of authentic texts.

Among their conclusions, Morris and others drew attention to the importance of the productive interplay between multiple emphases on different aspects of the acquisition process, as argued in general terms by Stanovich and by Xue and Meisels. Further, they attempted to specify that interplay in terms of activities centering on phonemes, words and texts:

> *While literally hundreds of studies have examined the role phoneme awareness plays in reading acquisition, researchers have paid little attention to beginning readers' concepts of words in text … This present study suggests an interactive relationship between beginning readers' concept of word in text and phoneme awareness.*

(Morris et al., 2003, p. 322)

What these researchers seem to have shown is that the notion of the word provides a generative bridge between the technical tasks of decoding and the cognitive and cultural task of making meaning. That is, through the development of a notion of the word, the learner 'sees through' the language depicted on the paper or screen, toward the textual nature of that language.

Morris et al. argued that the concept of words in text (as distinct from the more general notion of 'concepts of print') plays a key role in reading development, a role not yet fully recognised in the available research, helping to bridge other concepts, such as phonemic awareness and textual meanings. The researchers concluded that their research highlighted the importance of early literacy instruction in meaningful activities with text, including frequent writing, a point briefly discussed later in this review.

Paulson et al. (2004) arrived at a similar conclusion in their study of the effects of an early reading curriculum on language and literacy development of young children taking part in the enrichment program *Head Start*. They found significant longitudinal advantages in the case of those children taking part in an intensive language and literacy supplement to *Head Start* (called the *Montana Early Literacy* project) whereby literacy and language activities, focusing on meaningful narrative discourse, vocabulary, phonological awareness, and print development through writing, were built into daily experiences. Again, the mutually informing nature of these elements of literacy practice was demonstrated. Nation and Snowling (2004) showed a comparable level of interaction between oral language capabilities, reading and writing vocabulary, and comprehension in their five-year longitudinal study of students in the middle years of schooling (aged 8–13 years), concluding that it is the orchestration of resources involved in 'general language competence' that 'shares the development of operation of the reading system' (p. 355). What seems compatible with findings from many research studies then, is that different aspects of print and language knowledge mutually inform one another's development, particularly as learners progress beyond the acquisition phase of literacy learning, generally through the middle primary years.

In the literacy education field in Australia there are several reports of effective literacy education programs. Some of these reports are more systematic in their collection and analysis of data than others; also, some use descriptive rather than experimental approaches. In these studies, ethnographic and linguistic methods have been used to clarify the details of literacy learning contexts in and out of school. Since this review focuses largely on studies that have incorporated explicit assessments of outcomes, the details of these descriptive programs of research are not elaborated. It is important to note, however, that these research projects frame themselves as detailed narratives and case studies and, as in health and medical studies, they provide more compelling settings than reports of experiments for practitioners, supportive of reflection on the work they do in their own sites. Such program descriptions can allow practitioners a readier appreciation of the practical value of engaging theoretical issues about teaching and learning reading and writing (as, for example, in Hill, Comber, Louden, Rivalland, & Reid, 1998; Comber & Kamler, 2005). For the purposes of this review, the question arises as to the motivation provided by such studies for teachers to critically reflect on ways in which their practice might change in light of informing bodies of research. The specificity of the stories told in many ethnographic and case study projects in literacy education (including those that this author has himself conducted) always needs to be connected to theoretical and practical questions. It is these questions that draw practitioners out of their immediate zone of activity, so that they can develop a fuller understanding of the distinctiveness of that zone, and so that they know what it is in their practice they should change and why.

As an example, some literacy educators and researchers have been exploring methods for facilitating the English literacy learning of Indigenous Australian students, a group that performs on average below most non-Indigenous groups on tests of reading and writing. Some of this work grew out of work by Rose, Gray and Cowey (1999) and their colleagues (see Gray, 1987, on 'concentrated language encounters', Rose, Gray & Cowey, 1999, and work summarised in Gray, 2007, and Rose, 2006; and see Acevedo & Rose, 2007, and Walsh & Barnett, 2005, for an outline of the current program). These programs drew on Systemic Functional Linguistics and genre-based approaches to teaching literacy (Martin & Rothery, 1980), and they aimed to encourage systematic movement between levels of language knowledge (GPC, words, clauses, text macrostructures) and to provide a meta-language to talk about these movements.

A two-year evaluation of one of the products of this program of teaching was conducted in 24 primary and secondary schools, specifically following 400 'target' students from demographic groups conventionally regarded as at risk of not achieving well in literacy (Culican, 2004). Teachers' reflective journals and evaluations, pre- and post-intervention reading assessments, and pre- and post-intervention analyses of students' writing samples formed the data corpus for the evaluation. The findings reported were that literacy outcomes and student engagement were improved, especially in the whole-class delivery format, and where teachers worked

collaboratively on redesigning their pedagogy. The program was also reported by the researchers to be successful in developing teachers' professional knowledge about language and literacy and in providing a focus for sustained pedagogical improvement more broadly across middle years teaching.

Still to be developed at this point, however, is a body of compelling, conventionally conducted trials and evaluations of most programs such as this. Similarly, there needs to be an ongoing documentation of the kinds of students that benefit most directly from these interventions and the kinds of textual materials associated with these benefits. Effective literacy education work with Indigenous Australian students has significant promise not only for Indigenous students but also for theorising literacy and cultural and linguistic diversity (Mellor & Corrigan, 2004), so assessment becomes an even more crucial accompaniment to the conduct of the programs and a critical predictor of their portability.

There is a limited body of research that has approached the question of effective literacy teaching and learning 'from the ground up'; that is, by examining schools and classrooms that are performing more strongly than demographically predicted and by attempting to confirm hypotheses developed from some smaller-scale research about the critical features of those sites.

In a five-year longitudinal, nested multi-case design, for instance, Langer (2001) examined the features of instruction that make a difference in student learning, as demonstrated in high-stakes reading and writing tests. Participating in the study were 44 teachers, 88 classes, and 2640 students (along with 528 additional 'student informants' to provide information on the teaching and learning conditions). These participants were drawn from 25 schools across a variety of educational jurisdictions, and the schools were identified as serving poor and culturally diverse students. The instructional features of these schools were deemed to have worked 'in interesting ways to improve their English test results'. Langer aimed to identify schools that 'beat the odds' through a synthesis of information on a variety of programs conducted over two years. The data comprised notes of observations, informal interviews with teachers and students, regular emails with teachers and students, field notes and assessment scores.

Langer's conclusions from this major study were extensive, and they are summarised only briefly here. Overall, the findings outlined below applied across the varying socioeconomic contexts. Essentially, Langer found that, unlike 'typical schools', schools that beat the odds systematically used a range of skills instruction (both characterised as teacher- and student-focused in the conventional terms of the literature), rather than being dominated by one approach to literacy education. Assessments were regular but were explicitly integrated into ongoing goals, curriculum activities, and lessons structures rather appearing to be separate from test events. While curriculum-focused teaching and learning was common, overt cumulative connections were made between knowledge and skills across multiple curriculum areas instead of treating each domain of knowledge and skill as discrete.

The schools that seemed to beat the odds emphasised connectedness and continuity in learning. A clear difference from the activities in the less effective schools related to the pursuit of deeper understandings about a topic even when the goals relating to that topic had been apparently met. These less effective schools were more likely to move to an unrelated activity with different goals as soon as some barely adequate or superficial understanding seemed to have been achieved by some students in the class. Further, schools that seemed to beat the odds were more likely to engage the students in interactive learning in their efforts to develop depth and complexity of understanding in literacy, rather than relying heavily on students' working alone:

> *Although each of the higher performing schools had its own distinctive emphasis, all were marked by active and engaged students and teachers in academically rich classrooms. Furthermore, they were marked by the professionalism, knowledge, and dedication of the teachers and by collaborative participation of the students in quality 'minds-on' activities.*

(Langer, 2001, p. 855)

Langer acknowledged that some of the above features were in evidence in typical schools, but she pointed out that in beating-the-odds schools they were all present, working together, and mutually informing the organisation of teaching and learning activities.

Classroom citizenship and learning to read and write

It was noted in Section 1 that the active tradition of research in the area of the literacy learning of students with a variety of special needs would be in general beyond the scope of this review. With regard to expanding an understanding of literacy education more generally, however, it is worth noting that many approaches to helping such students not only tend to stereotype their needs, but also tend to assume that what is needed for the fuller development as active members of a literate society is an increased focus on code-breaking resources at the comparative expense of the other features of literacy learning.

This issue was addressed by Kliewer et al. (2004). Their inquiry was specifically aimed at understanding how special-needs students were being supported to be full, competent citizens of a 'dynamic literate community', and what the obstacles might be that hinder this full acceptance. The researchers studied in detail the operations of nine 'inclusive preschool and kindergarten classrooms' publicly nominated as 'successful'. These classrooms each included several students labelled as having a variety of 'moderate and significant disabilities'. The study comprised an ethnography conducted over two years, and involved close observation of 213 children, 62 of whom were characterised as having disabilities. Interviews, observation/field notes, and document analyses formed the bases of the data corpus.

These are some of the conclusions drawn by Kliewer et al.:

- The teachers in this sample maintained a significant focus on teaching literacy as meaning-making, using a variety of cognitive, semiotic and textual ideas ('knowledge, thoughts, concerns, interests, desires and stories').
- All students were encouraged to, and explicitly taught how to participate in imaginative literacy experiences that gave them varied opportunities to practise writing and phonemic awareness in different textual settings.
- All students were encouraged to, and explicitly taught how to use multiple semiotics – signs, movements, pictures, numbers, graphs and printed language – in their reading and text production activities.

Kliewer et al. were interested in the creation of a literacy-based community, and of a setting for 'citizenship' that had at its heart participation in the key literacy work of the group. They aimed to show how the creation of literate communities with a focus on active participation can include those usually excluded from literacy experiences and learning. The main hindrance they found in these processes resided in some teachers' assumptions that disability intrinsically precludes the involvement of 'disabled' children in the activities that lay the foundation for intellectual and academic achievement. The data, in contrast, indicated that these classroom activities enabled students with disabilities to develop and apply their emerging literacy skills through a 'vast, active, engaging range of choices'. The emphasis was on creative work on important topics as the setting for participatory citizenship for these students.

> *By emphasizing a holistic vision of the literate community over rigid adherence to sequenced phonemic subskill mastery, teachers appeared to open up citizenship to young children who were traditionally excluded.*
>
> (Kliewer et al., 2004, p. 380)

The researchers concluded with a concern that an over-reliance on skills-training models was, in some settings, potentially minimising the sense of belonging and active engagement among some students, and thereby working against their active participation in their literacy education activities.

Writing

While writing has been mentioned in the research done in and around print literacy over the last century, it is clear that it is reading that has been at the eye of the storm in most national reviews and debates, particularly in Anglophone countries. But there is a lively and informative tradition of research on writing. Much of it has targeted high school and post-compulsory education (e.g., composition courses at college and university), but there have been attempts to insert writing into centre-stage as a research topic that is relevant to the general question of learning literacy at school. An illustration of such research is provided here.

The relationship between the development of phonological awareness and the development of writing in Spanish-speaking kindergarten students was the focus of Vernon and Ferreiro (1999). They made the case that writing development was a critical but generally neglected variable in considerations of learning about GPC among young school students. Vernon and Ferreiro were interested in pursuing the hypothesis that five- and six-year-old students will give more analytical responses when presented with written (as opposed to oral) texts. Participating in the study were 54 monolingual Spanish-speaking kindergartners from lower-income backgrounds attending five public kindergartens in an urban area in Mexico. Each student was interviewed and assessed twice over a one-year period using both written and oral texts. The researchers found that the way these students dealt with oral segmentation tasks was strongly correlated with their level of conceptualisation about the writing system, and that, while phonological abilities can be trained in purely oral contexts, development of phonological awareness is closely linked to young children's writing development to an extent not recognised in the mainstream of reading research:

> *If we retain the naïve view that considers an alphabetic writing system as a visual way to represent phonemes, making learners aware of these phonemes seems the only pertinent thing to do. But writing is much more complex than that. That is why the task of becoming literate cannot be reduced to the learning of a code.*

(Vernon & Ferreiro, 1999, p. 415)

Again we find researchers concluding that our understandings of the acquisition of the codes of a written language – the use and production of those codes – need to incorporate the wider linguistic, cognitive and social contexts in which those codes are actually encountered and practised, just as Huey called for researchers to study and theorise learning to read within the settings that students themselves encounter that learning.

Such conclusions again raise the question of how faithful instances of literacy education research remain to actual sites of practice. In school sites, for example, a focus on writing leads quickly to an appreciation that much writing after the early years is closely bound up with activities done within very specific curriculum areas. Indeed, it has been argued (Kress, 2003) that some curriculum areas will increasingly demand work products from students that are based largely on the use of images, graphics, animations and so on. Developments such as this point again to the need for researchers with a general interest in literacy to base their theories and empirical interventions on an adequate description of the materials and activities that are found in contemporary educational settings. It would seem that some approaches to researching reading and writing in school employ concepts and methods that may make life more manageable for the researchers to precisely the degree that they make it less recognisable to teachers and students.

Breaking the code and new technologies

A scan of ongoing research on Information and Communication Technologies (ICTs) and literacy education demonstrates the ambiguities in the research corpus and points to the importance of understanding how ICT-based teaching and learning relate to the social processes of schooling as well as to the contents of the literacy learning. This pedagogic concern is becoming more evident at a time when ICTs have increasingly penetrated institutional educational settings

at all levels and have brought with them expectations about more sophisticated and efficient learning (Garner & Gillingham, 1998; McCormick & Li, 2006). At the 2007 conference of the combined Australian Literacy Educators Association and the Australian Association of Teachers of English, the most common topic of presentations was digital language and literacy learning – eLearning, Digital Online Objects, www2 writing, blogs, and the rest. This is clearly a burgeoning field for research activity, so two overviews and a specific example are included here. 'Up-to-date ICT education research' is an oxymoron, but these studies may give some flavour of the ways in which new technologies have come to be put to work in literacy teaching and learning.

Blok, Oostdam, Otter and Overmaat (2002) reviewed the research literature on the question of the efficacy of computer-assisted instruction (CAI) programs in supporting beginning readers. Their conclusions were based on 42 studies, drawn from data bases such as ERIC, PsycLit and Dissertation Abstracts International and conducted from 1990 to 2001. Their conclusions were generally positive but much less enthusiastic and unequivocal than those reported by the US National Reading Panel (2000). Specifically, they found that, in general, CAI programs appeared to be effective, showing a small but reliable effect on students' beginning reading abilities. Perhaps their most significant finding, however, related to the scarcity and quality of the research in the area. They characterised the area as being well stocked with boosterism, promissory notes and high hopes, but less so on convincingly designed research studies. Of particular interest to them was the lack of research that focused on the retention and use of reading materials by young learners (as opposed to rote reading aloud) and on the transfer of learning from one resource (e.g., alphabetic knowledge) to another (e.g., comprehension). Those complaints are surprising when we take account of the extraordinary growth of the use of, and expenditure on digital resources in educational settings (Pittard & Bannister, 2005), and in light of the enormity of some of the claims made about their efficacy and promise.

A similarly broadly based analysis of current research on the demands made by the use of the Web as an information resource makes on the support and supervision of learning processes of students from early schooling to Year 12 was conducted by Kuiper, Volman and Terwel (2005). They reviewed the relevant literature for the period 1997–2003 from the largest educational research databases, and, unusually, included 'both empirical studies and theoretical and philosophical literature'. They concluded that:

- Students often have difficulty locating relevant and useful information, and often lack skills in exploring websites, resulting in a focus on trying to find one answer to their question.
- Students rarely look at the reliability or authority of the information they locate and use.
- The vast amount of information on the web results in access to information, but skills to decipher, weigh up, analyse, and compare that information with other sources is lacking in the research literature.

Kuiper et al. concluded that students need to be explicitly helped to acquire search skills and the skill to make the information they find purposeful, a topic on which there is virtually no empirical research.

Clearly, the Internet presents particular educational problems for teachers, compared with the traditional controlled and vetted materials usually available in school libraries. The artificial distinction between reading-for-school and reading in the outside world is absent in online learning settings. This raises questions that used to come under the heading of 'critical literacy' – questions about whose interests are served and naturalised in texts (Freebody, 2005), how texts are constructed to be persuasive by restricting interpretation and objectifying the writer's perspective (Gee, 1991, 2005) and so on. The increased use of online resources in schools is rapidly making irrelevant questions about whether or not 'critical literacy education' is necessary or a frill, or suited only to older or more academically advanced students. Online critical literacy is a basic skill when the learner is online.

These studies agree that the interactional dynamics of classrooms, the key differences that matter for literacy between classrooms, and the nature of effective intervention in classrooms whose participants are interested in expanding their uses of digital resources, all become topics that require adequate empirical account in any school-based efforts to improve the teaching and learning of reading and writing.

A study that reflects the inconsistency of findings related to the value of new digital technologies in early literacy learning is reported by Paterson et al. (2003). They investigated the effectiveness of a computer-based learning system on emergent reading in eight kindergarten and Year 1 classrooms. This software program was used in daily 15-minute sessions on the computer, largely for practising GPC-based literacy skills (e.g., letter names, rhymes and songs). The study entailed a mixture of methods, including naturalistic inquiry and a quasi-experiment over the course of one year. Results were compared with those of eight classrooms, matched demographically, that acted as controls. Teacher surveys, teacher interviews, classroom observations, measures of a variety of reading and writing achievement (based on Clay's observational survey, 1993) were used to reflect the students' development of multiple aspects of literacy.

Paterson et al. found a number of positive aspects of the intervention. The students generally responded enthusiastically to the computer session; almost all of the teachers asserted that the program was motivating and effective; and the teachers used the instructional information from the program to help monitor students' progress. The program group, however, showed no statistically reliable advantage over the control groups on the reading measures.

What was associated with substantial and reliable variation was the teacher variable. The researchers hypothesised that this demonstrated the primacy of quality teaching over the program in use, digital or otherwise. In specifying that argument, they made the case that many ICT-packaged approaches do not allow students to reflect on their progress through their participation in and witnessing of classroom interactions, that is, in the context of other students' apparent progress and development. In light of recent research demonstrating the significance of feedback in teaching and learning (Hattie & Timperley, 2007), they further argued that a computer program or any other heavily scripted program also cannot adequately replicate responsive, accurate, and appropriately weighted feedback at appropriate moments.

Paterson et al. have put another angle on the issue of the social versus the technical aspects of learning to read and write in and for school. This directs our attention to Huey's (1908) and Heckman's (2005) observations concerning the undervaluing of the development of social, interactional capabilities in teaching and learning. Central to the processes of learning are what young learners learn about themselves as learners and about becoming fluent and effective in reading and writing. Such learning results partly from witnessing their peers learning to read and write. As with studies summarised above, especially that of Kliewer et al., such a conclusion also challenges researchers to ensure that they do not pursue the technical or relational aspects of teaching and learning at the expense of the other. These interactional aspects of learning (as shown most dramatically in Wortham, 2006) are intricately connected in classroom events.

Summaries of research

Research in these cognitive and social traditions has a long provenance. In the mid-1970s, the Center for Study of Reading (CSR), based at the University of Illinois, conducted extensive programs aimed at the middle school years, and the CSR was funded explicitly to complement the large body of research that was continuing to build up on the early acquisition phases of reading at the expense of more comprehension-oriented inquiries. CSR used and strengthened theoretical and methodological approaches developing in cognitive sciences at the time. The researchers there, over the course of 15 years and in the course of producing over 650 research reports (see http://www.csr.ed.uiuc.edu), worked on the notion that reading is a context-dependent process that is interactive, constructive and strategic. These researchers developed theoretical frameworks whose implications for theory and practice in classrooms they could articulate and examine systematically (Gaffney & Anderson, 2000).

That research tradition was inherited by the Center for Improvement of Early Reading Achievement (CIERA). In reflecting on the main lines of its research over the years, the research staff of CIERA drew up a list of recommendations for the teaching of code-breaking and comprehension in the early years of schooling that they believed were warranted by their experimental and survey research.

Figure 12: Ten conclusions warranted by the research of CIERA

1	Always provide purposeful, explicit teaching.
2	Aim to orchestrate classroom interactions that support the understanding of specific texts in depth.
3	Start providing reading experiences and teaching reading, and encourage parents and carers to start, before children read conventionally.
4	Teach the skills and strategies known to be used by expert readers.
5	Analyse each text you wish to use carefully in order to determine its appropriateness for particular students and its appropriateness for use in particular pedagogical strategies.
6	Build explicitly on knowledge, vocabulary and advanced language development, from the known to the new.
7	Routinely use texts from across all genres and school subjects.
8	Focus equally on engagement and motivation.
9	Use assessments that are explicitly targeted at informing your instruction and at monitoring students' progress.
10	Provide ongoing teacher professional development and learning.

(CIERA www.ciera.org/library/instresrc/compprinciple)

Some recent policy-oriented research summaries have simplified the theoretical, methodological and professional issues at stake, sometimes via the simple strategy of ignoring many decades of research. Long-term, focused efforts, nonetheless, such as those carried out by CSR and CIERA, attest to the benefits accruing to teachers and policy makers of research that remains theoretically informed, methodologically coherent. Like Huey, such research still tries to keep one eye on the actual material and social sites of teaching and learning.

Methodological and conceptual issues

The projects discussed above have taken place within a volatile theoretical, methodological and professional environment. Interspersed with many careful steps forward taken by literacy education researchers over the decades have been occasional leaps, and a few major disruptions to conventional thinking and research practice. One such interruption, which may result in a subsequent leap, has been occasioned by Scott Paris.

For over 40 years, reviews have concluded that the relationship between knowledge of GPC and reading development has been strong, enabling and unquestionably causal. But recently, a dissenting view has emerged: Paris (2005) has articulated a series of concerns about the conventional wisdom on the matter of this relationship. In questioning the straightforwardness

of this relationship, Paris first drew attention to the distinction between constrained and unconstrained skill sets and then developed the significance of this distinction for early literacy researchers. Paris argued that constrained skill sets are learned (virtually), completely by (virtually) everyone over a relative short period of time. Examples include alphabetic knowledge and phonemic awareness. Unconstrained skill sets develop over much longer periods and perhaps are never 'fully acquired', for example, as in comprehension, vocabulary, repertoires of genres. Paris argued that constrained skill sets such as alphabetic knowledge and phonemic awareness are generally acquired along the lines of an 'S'-shaped curve, a sigmoid that models an initially slow movement up from the baseline from no knowledge, then into a steep acquisition curve that flattens out as the entire set becomes mastered. The many years of research on children's acquisition of alphabetic knowledge and phonemic awareness indicate that the moment of departure from the baseline and arrival at the plateau at the top of the S-curve will vary somewhat, but basically the period from about 3.6 to 8 years covers the cycle in almost all cases, under standard schooling conditions (Byrne & Fielding-Barnesley, 1995).

Paris pointed out that, in spite of the many studies that have taken this performance distribution as if it were a normal distribution, in fact standard parametric statistical procedures are not valid in the case of a tight sigmoid curve, and they can only appear to have been validly applied for the very short acquisition phase. Further, the point of departure from the baseline and the subsequent point of plateau at the ceiling may in fact have less to do with cognitive processing or the maturity of the construct of a phoneme in the knowledge set of the learner and more to do with his or her prior-to-school experiences, in the home and otherwise. Measures of alphabetic knowledge and phonemic awareness can thereby be used inadvertently as proxies for these background factors in young children's lives. Paris concluded that:

> *unconstrained skills such as vocabulary and comprehension develop before, during, and after constrained skills are mastered so there is no evidence to warrant instructional priority of constrained skills over unconstrained skills.*
>
> *(the) risk is that policy-makers and the public may equate success on constrained skills with reading proficiency. This would create a minimum competency approach to reading assessment that does not adequately assess children's emerging use and control of literacy.*

(Paris, 2005, pp. 200–201)

These conclusions present a challenge to a fundamental 'fact' in early reading research that has been heavily relied upon in policy interventions, and they draw attention to the ways in which various sources of knowledge and skill are orchestrated in effective literacy activity.

Concluding comments

A perennial problem for researchers in literacy education concerns the adequacy of the accounts of the key phenomena under study – literacy, education and literacy education: What activities and practices are we demarcating when we use the term *literacy* in the company of educators? What are the demands on people's communicational activities that specifically relate to the fact that they live in a literate society? What does that mean for the itemising of the components of 'literacy'? And what does that in turn mean for the scoping and sequencing of those items into a coherent course of activity and study? Clearly, the dichotomy between code/skill emphases and meaning/integrated emphasis proves to be questionable following the documentation of teachers' actual practices. It seems that many teachers have, or at least had until recent reviews and policies, been so unaffected or unconvinced, that they have perhaps ignored or rejected this dichotomy, regardless of the theoretical refuge it has long offered researchers and media commentators. New, more nuanced ways of talking about teaching and learning practices in schools are needed from researchers who have carefully observed the working conditions of teachers.

Moreover, many research traditions aim to single out variables – contextual, material, instructional, personal, demographic – and pursue the details of their relationships. This often results in theoretical and empirical accounts that prioritise one aspect of literate functioning over others, giving it the status of a 'locomotive' that pulls the other aspects along. This is partly a function of researchers' proper concern to isolate variables and test very specific hypotheses in stripped down settings wherever possible, and to test simple, preferably linear models. But it creates problems for those seeking to alter their practice based on research. How can educators use such research, when their intuitions about their own practice, along with some of the research of the sort summarised above, lead them to believe that these variables clearly inform and facilitate one another in complex ways. Even the snippets of research synthesised in Section 3 have shown that these relationships are by no means simple.

In their study of the reading and comprehension of pre-readers' narratives in wordless picture books, for example, Paris and Paris (2003) documented developmental patterns of performance, the generalisability of findings across different picture books, and the reliability of assessment over a period of one year. Among their conclusions was this:

> *Most parents and reading educators agree that the primary goal of reading is comprehension, and most agree that comprehension is difficult or impossible if the words are not decoded or understood … We agree that automated decoding skills enable better comprehension with increasing age and skill, but we think that the dependency does not imply that comprehension is only derived from decoding nor that comprehension is unimportant for young children.*

(Paris & Paris, 2003, p. 41).

This again points directly to the importance of the multiple capabilities, along with cracking the code, that need to be brought into play in an adequate literacy education program, a program that has been designed to offer both the necessary and the sufficient resources to learn reading and writing for participation in a literacy-dependent society.

section

4 Literacy, skills and knowledge in school: Ways forward

> *The writing down of ideas, whether they were philosophical or scientific or historical, served as a resource and a challenge to those who came afterwards. They could ignore the challenge only with some difficulty.*

(Harris, 1989, p. 336)

A recurring theme of this review concerns the need to draw on the resource provided by a serious historical study of literacy education and schooling, and to build on that knowledge through the ongoing study of real classroom activities as they occur in precisely the sites that researchers wish to understand and influence. Apparently, this is such an obvious requirement of any serious literacy education research effort that it is generally overlooked. Most research in literacy education:

> *reflects a view of 'practical pedagogy' in which the term is taken to refer to a set of practices and understandings that are either too common-sensically known, too obvious and widely understood, or, contrariwise, too idiosyncratic, messy, or inchoate to be an object of principled study – either too well-known or too unknown to be analytically knowable … we need to have some analytic framework for describing pedagogical practices, along with some understanding of what holds them in place, how they evolve, and what makes some of them dominant, residual, or emergent in different times and places.*

(Freebody & Zhang, in press)

There is a need to analyse the patterns of talk and text usage within which literacy is learned and taught in schools. This in turn calls for research designs that can generate theories and hypotheses that themselves have the capacity to motivate and focus supplementary research activities such as large-scale testing, experimentation, case studies, design-based research projects, and surveys of practices and beliefs. An exploration of the qualities of literacy teaching and learning in schools cannot be validly undertaken with experimental or survey methods alone. Nor can data collected in these ways validly act as a proxy for descriptions of classroom activities. Experiments and surveys are methodological procedures best suited to 'confirming' models of practice and relationships among variables, based on mature theorising

of a relatively stable phenomenon. The field, as a community of inquiry, needs programmatic cycles of exploratory and confirmatory research. These cycles need to be coherently theorised and systematically conducted with methods and methodologies that are made visible enough to be scrutinised.

In reflecting on her extensive review of rigorous empirical studies of early reading, Adams commented:

> *Whereas the laboratory studies provide clean contrasts of whatever variables they were designed to assess, they leave one wondering about the would-be influence of all those factors that were controlled or absent. Conversely, whereas the classroom studies offer real-world validity, they leave one wondering about the many factors that, though unavoidably present, were uncontrolled or unmeasured.*

(Adams, 1990b, p. 1)

The implication here is that, because we cannot avoid these 'many factors' that 'leave one wondering about', we should set about isolating them from confounding factors, and measuring them as separate, non-interactive entities, without losing the 'real-world validity' of the project. This balancing act is beyond the capacity of experimental research alone. As statistician Goldstein observed:

> *the difficulty from an experimental viewpoint is that it is practically impossible to allocate randomly with respect to all … possible confounding factors.*

(Goldstein, 2003, p. 11)

Given what has been found about the durable demographic predictors of literacy learning success in schools from this review and the many other projects conducted over the last 40 years – first-language status, socioeconomic status, gender, ethnicity, geographical location, and so on – it is difficult to imagine what 'controlling' or 'dis-counfounding' such 'unavoidably present' factors might look like. Nor is it clear how ethical clearance could be obtained to conduct the random allocation of participants into these demographic 'treatment conditions'.

But the 'measure-and-control' logic is also not up to generating a description of the qualities of teaching. We have seen from studies discussed in Section 3 that the distinction enshrined by Chall between 'skills-based' and 'meaning-based' teaching does not capture anything like the diversity and interactivity of different approaches to teaching (Freebody, Ludwig, & Gunn, 1995). This distinction has long passed its use-by date as a first-level heading in discussions about teaching reading and writing. Furthermore, several of the studies reviewed converge with others on the point that varying balances of activities are effective in different circumstances. Konold, Juel and McKinnon (1999, abstract) summarised the extensive CIERA findings in this way: 'there is more than one route to successful reading performance'. Similarly, Snow, Burns and Griffin (1998) concluded their summary of the experimental research with:

> *if we have learned anything from this effort, it is that effective teachers are able to craft a special mix of instructional ingredients for every child they work with. But … there is a common menu of materials, strategies, and environments from which effective teachers make choices.*

(Snow, Burns, & Griffin, 1998, executive summary)

We can see that the term *literacy education* encompasses a range of programs that vary substantially in their focus on correctness, control, breadth of repertoire, exercise of creativity and agency, balances of reading and writing in a balanced range of modalities and so on. Effective and relevant literacy education is a central part of the compact between governments and citizenries (Lo Bianco & Freebody, 2001), and that compact includes a strategic orientation to the *kinds* of skills, knowledge, and dispositions called for in contemporary literate societies, as well as some 'best-bet' analyses of the literacy demands of future domestic, civil and vocational settings (Gee, Hull, & Lankshear, 1996).

Along with forms of summative, confirmatory research, such as surveys and experiments, therefore, inquiries into literacy education need to accomplish simultaneously four related tasks:

- identifying sites relevant to the conduct of what counts as literacy teaching and learning
- documenting what goes on in those sites
- documenting what the participants take to be the key, defining elements of what goes on in those sites
- documenting what goes on when attempts are made to improve settings for the teaching and learning of reading and writing.

In other words, as this review has argued, a lead element of the literacy education research effort needs to be the systematic and adequately theorised observational study of teaching in actual classrooms.

In this section, the lines of discussion are drawn together to lay out some principles about further research in the area of literacy education. These suggestions arise from the research reviewed in earlier sections, but also from a sense of what additional research will be needed to build up understanding of literacy teaching and learning that are sufficiently coherent within their disciplinary settings and sufficiently actionable in real educational sites that they can guide practice and policy into the future. Viewing classrooms as literacy research sites immediately directs us to three characteristics of contemporary classrooms in Australia:

- The work in these classrooms becomes increasingly curriculum-specific as the school years progress.
- The teachers and students use more than simply the printed word.
- Many of the students understand and use more than only English.

These are issues that can offer new views of becoming literate, and that call for increased priority in the literacy education research field. Each is discussed below.

Disciplining literacy and inscribing the disciplines

As argued in Section 2, each discipline in the social and human sciences effectively produces a set of phenomena that are taken to count as essential to the idea of *literacy education*, in ways that make these phenomena amenable to its methodological and conceptual interests and preferences. In comparing the approaches of linguists, psychologists, anthropologists and sociologists, it was illustrated how these processes of epistemological re-contextualisation include a version of the settings and scripts for learning. This is analogous to 'a theatre of activity'. There are the players, the key movers of the plot, the relevant props, the progression of plot and characterisation, the conflicts and obstacles, and the dénouement, and how it all resolves, the upshot and outcome. Some of these settings for theorising literacy education are sparsely populated, their plots driven, apparently single-handedly, by texts or the cognitive processing systems of individuals. At the other extreme are ensemble pieces, in which the players act out scripts silently inherited from power structures, cultures, or other abstractions. Others still are intent on documenting the way the actors build the script as they go, there and then, each time the first time, in a celebration of the distinctiveness of local time and place. The point has been made that many debates that appear to be about literacy education are actually debates about the different contributions that different disciplines can make to research on that topic, and the relative value of those contributions to teachers and policy makers.

Heckman's key lessons

But disciplines 'make' literacy practices in another powerful way: they recast the forms in which literacy is put to work in schools. To frame this issue, we can consider research on the development of human skills in general. Economist James Heckman received the Nobel Prize for his extensive studies of the development of human skills and the impact of those skills on

economies. He drew these six key lessons from the human capital research on skills formation (2001, 2005).

1 Abilities and environments both matter. Decades of debate notwithstanding, the best evidence, according to Heckman indicates that both environmental and personal ability variables are significant in the development of skills.

2 Abilities are multiple. A key concern for Heckman was the comparative neglect of non-cognitive or 'social' skills:

> *Current policies regarding education and job training are based in fundamental misconceptions about the way socially useful skills embodied in persons are produced … they exclude the critical importance of social skills, social adaptability and motivation … caus(ing) a serious bias in the evaluation of many human capital interventions.*

(Heckman, 2001, p. 2)

3 Cognitive and non-cognitive differences between socioeconomic groups appear at an early age but families and schools can compensate for these differences. In a study of low socioeconomic communities, for example, van Steensel (2006) showed that, contrary to some folk and official accounts, parents do provide literacy support for children in their early years of schooling (and this is supported by a two-year longitudinal study, Wood, 2002), but that much of this home support related to 'technical' literacy skills rather than to interactional, conceptual and comprehension skills that were more characteristic of more affluent home environments or of parent with higher educational levels.

4 Different abilities are amenable to change at different ages.

5 The later the intervention, the less effective.

> *The best evidence supports the policy prescription: Invest in the very young and improve basic learnings and socialization skills.*

(Heckman, 2001, p. 4)

6 Discontinued supports dissipate early gains. Heckman reports meta-analyses that show dramatic immediate gains following early interventions in reading, writing, numeracy and social skills. These analyses also indicate, however, that strong continuing support is necessary if these gains are to be maintained, in particular when the programs involve young students not achieving well in conventional schooling settings. Heckman referred to literacy, numeracy and social adaptability skills as 'self-productive' skills, that is, in his terms, they are 'skills that beget skills', capabilities that direct and enrich knowledge growth and cognitive development.

> *Complementarity (synergy) of investment reinforces self-productivity … this empirically established complementarity also suggests that early investments must be followed up by later investments to be effective.*

(Heckman, 2005, pp. 3–4)

A question for practitioners and policy makers is: What constitutes 'continued support' for literacy education in school? Any consideration of 'complementarity' in literacy education needs to deal with the fundamental fact that literacy in and for school involves dealing with, and growing within, significant changes in textual, cognitive and social demands over the school years. That is, schools are implicated in helping young people manage, use and produce texts that form part of the increasing distinctiveness of the disciplines around which school curricula are organised. The apprenticing of young learners in this process does not just entail some fixed and stable preferred literacy pedagogy, but rather it draws our attention to how teachers work with texts as students evolve in their understanding of the epistemological particularities of the various school curriculum domains.

Literacy curriculum in school

The distinctively cumulative nature of effective curriculum knowledge over the school years is a special aspect of textual practice, a focal point for thinking about literacy development in the middle and secondary school years. Much of Bernstein's work in the sociology of equity and school knowledge has been directed to this critical integrative, cumulative, 'vertical' feature of learning in school:

> *a vertical discourse takes the form of a coherent, explicit, and systematically principled structure, hierarchically organised, as in the sciences, or it takes the form of a series of specialised modes of interrogation and specialised criteria for the production and circulation of texts, as in the social sciences and humanities … a horizontal discourse entails a set of strategies which are local, segmentally organised, context specific and dependent, for maximising encounters with persons and habits.*

(Bernstein, 1999, p. 159)

This integrative cumulative development of students' curriculum knowledge in schools shows itself in different ways in the different disciplines' texts through distinctive distributions of vocabulary and grammatical patterns (Freebody & Muspratt, 2007), distinctive patterns of knowledge construction (Martin, 2007), and distinctive ways of representing criteria for proof in grammatical and textual forms (MacDonald, 1994). In this light, we come to see disciplines as frameworks for acting on experience and expanding understanding and practice, and thereby for guiding the public accumulation, dissemination and scrutiny of knowledge. The distinctive epistemological practices of disciplines – including conventions for what counts as data, evidence and argumentation – are products of their ongoing histories. In effective classrooms, these distinctive practices are made to matter for the ways in which learners are apprenticed in their reading and writing.

In that light, there is a need to conceptualise literacy within the knowledge categories that currently organise valued knowledge in and for school. This may be referred to as curriculum-literacy awareness. This will lead literacy educators to contribute to an account of how programs embody and show certain kinds of knowledge in particular ways. Schools' organisation of curriculum imperfectly mirrors the disciplines (Christie, 1999), but the materials, interactions and assessments of schooling are nonetheless increasingly oriented to those knowledge formations as the school years progress. Corralling 'the literacy problem' in the early years, and trying to solve it there, with grammatically simple narratives accompanied by realistic, representational graphics, discussions about characters and what they might do next, ensures that many students are abandoned when they encounter curriculum-specific literacy demands across the middle and later years. Mapping the evolution of knowledge-building through texts across the middle years and developing more connected, cumulative and curriculum-specific ways of teaching across that process is an urgent matter for literacy researchers.

Words, pictures, maps, graphs, animations

Even a cursory look at the materials used in school, including those that students are expected to produce for assessment purposes, makes it clear that multimodal codes now occupy much printed and digital school text. The case has been made that printed language is gradually loosening its grip on the key sources of knowledge acquisition in and out of school, and that theories aiming to inform the teaching and learning of reading and writing need urgently to make up ground on this emerging feature of literacy education. Lemke (1998) has made the case forcefully:

> *We need to understand how narrowly restrictive our literacy education traditions have been in the past in order to see how much more students will need in the future than we are now giving them. We do not teach students how to integrate even drawings and diagrams into their writing, much less archival photo images, video clips, sound effects, voice or audio, music, animation, or more specialized representations' (mathematical formulas, graphs and tables, etc.) … What we really need to teach, and to understand before we can teach it, is how various literacies and various cultural traditions combine these different semiotic modalities to make meanings that are more than the sum of what each could mean separately.*

(Lemke, 1998, p. 288)

Further, the argument is that verbal and non-verbal representations do not merely supplement one another in a simple, additive way. Rather, as Lemke has suggested, different meaning-making resources have different strengths and weaknesses. As a result, in any particular learning setting, more than one resource will be co-deployed. Important here is the distinction Lemke drew between 'typological' (i.e. by kind) and 'topological' (i.e. by degree) (Lemke, 2002). Each semiotic resource is particularly good at a certain type of meaning, or is organised around a certain type of meaning-making:

> *Language, as a typologically oriented semiotic resource, is unsurpassed as a tool for the formulation of difference and relationship, for the making of categorical distinctions. It is much poorer … in resources for formulating degree, quantity, gradation, continuous change, continuous co-variation, non-integer ratios, varying proportionality, complex topological relations of relative nearness or connectedness, or nonlinear relationships and dynamical emergence.*

(Lemke, 1998, p. 87)

There have been some attempts to develop detailed analytic methods for use on visual materials (Emmison & Smith, 2000; Kress & van Leeuwen, 2006; Unsworth, 2004), but to date there have been few systematic attempts to insert these analyses into inquiries into literacy education in schools, especially in the early years.

A research effort increasingly focused on multimodal texts would bring with it an increased awareness that the specialisation of literacy uses over the school years along curriculum discipline lines also calls upon students to make texts that are multimodal. This calls to mind changing communication patterns in popular culture and domestic life – Web2, blogs, Youtube, SMS, virtual communities, and the rest – and in work sites. Literacy researchers have begun to document the ways in which these changing conditions are affecting young people's lives (Gee, 2007). Among other things, this research suggests that school systems and researchers in literacy education have, for the most part, been resolutely nineteenth century in their approach to assessing literacy in school settings.

> *Imagine a nation of horse riders with a clearly defined set of riding capabilities. In one short decade the motor car is invented and within that same decade many children become highly competent drivers extending the boundaries of their travel as well as developing highly new leisure pursuits (like stock car racing and hot rodding). At the end of the decade government ministers want to assess the true impact of automobiles on the nation's capability. They do it by putting everyone back on the horses and checking their dressage, jumping and trotting as before.*

(Heppell, 1994, p. 154)

As an example, investigations into multimodalities of teaching and learning Science by Kress, Jewitt, Ogborn and Tsatsarelis (2001) have shown that, along with the written and spoken word, the communication modalities at work include images, gesture, body language, eye contact and movement. These often co-occur in complex ensembles. Findings indicate that,

in some curriculum areas, speaking and reading and writing are not the dominant modes of communication; teachers and students construct knowledge about particular themes using an orchestration of a range of modes, each with its own representational and communicational affordances and each contributing in a distinctive way to the development of meaning in the classroom (Jewitt & Scott, 2002).

When we actually transport these ideas into schools, we see that students move from subject to subject many times a day, trying both to manage and produce diverse ensembles of meaning-making systems, on demand, and according to the school timetable. In the corpus of research informing literacy education, much practice in pre- and in-service professional development, and much assessment of students' literacy capabilities, simply do not reflect these potentially fragmenting everyday multimodal practices of teachers and students. The absence of attention to this semiotic-switching by students and teachers across the school day, and as a literacy problem worthy of rigorous research, reflects three things:

- the priororitising of laboratory-like controlled and focused experimental research, usually not conducted in the real-time of students' and teachers' lives
- the notion that literacy refers to a generic set of skills unrelated to discipline-specific usages
- the relatively factional nature of educational research within the curriculum areas (Mathematics education research, English education research, and the rest).

With no research tradition to turn to, teachers are left with tacit rather than analytic knowledge of the literacy problems posed by these forms of textual communication.

Multilingual learners learning to read and write English

There are over 100 migrant or community languages spoken in Australia and an additional 90 or so Indigenous Australian languages. Researchers seem rarely to have capitalised on the distinctive purchase on teaching and learning to read and write English in school that is offered by the increasing numbers of young students for whom English is just one of their languages (Bernhardt, 2003, 2005). Some cross-language research (Anderson & Li, 2006; Birch, 2002; Dressler & Kamil, 2006; Genesee & Geva, 2007; Koda, 2005) indicates that our understanding of aspects of reading development can be enhanced by systematic comparisons of the literacy acquisition processes involved in the languages known by children with the ways in which they learn to read English.

It has been argued, for example, that children who learned to read via a language with a more transparent orthography are more likely to use phonological processing when learning to read in another language even though the new language may demand strategies other than those that are phonology-based (Mumtaz & Humphreys, 2001). The specifics of these variations will vary according to the linguistic contrast of interest, but the general point is that 'learning to break and use the codes' may be too general a topic of research to give guidance and insights to teachers in contemporary classrooms. What needs to be specified is the material peculiarity of the particular script at hand, as that script constitutes a domain for learning to read and write: 'The teaching of reading calls for script-specific methods' (Karanth, 2006, p. 402).

Further, research programs aimed at these questions have potentially important consequences for an understanding of literacy development in civil and vocational settings that are increasingly characterised by multilingual activity (Lo Bianco, Liddicoat, & Crozet, 1999). Fashioning a monolingual society out of generations of multilingual young learners has never been culturally intelligent, but it now will have increasingly visible consequences for the economic condition of a society as well. An acknowledgment of the linguistic diversity of Australia, and the linguistic resources at hand in any given Australian classroom, should leave us in no doubt about the significance of research aimed at capitalising on those resources so that researchers and teachers can advance the intellectual, social and cultural interests of students. What is also on offer, and yet to be fully harvested, are the theoretical insights into literacy teaching and learning that this distinctive diversity offers researchers.

Omissions and ways forward

In societies such as contemporary Australia, to study literacy is to study how our consciousness and our activities are interconnected in patterns that draw us into public life. These interconnections are about how the private is made public, and vice versa, in literacy-saturated societies. To study literacy learning is to study how that process of connection is begun and how it develops as young learners are acculturated into valued skills, knowledges and dispositions in the context of a thoroughly text-dependent school system. The questions that researchers ask about literacy education, therefore, need to reflect the scope of such an inquiry. There are increasingly serious consequences for young people, and for the character of social life more generally, of educators' continued pursuit of comfortable questions, or of simple, quick answers to complex questions. As Huey put it a century ago:

> *to completely analyse what we do when we read would almost be the acme of a psychologist's achievements, for it would be to know very many of the most intricate workings of the human mind, as well as unravel the tangled story of the most remarkable specific performance that civilisation has learned in all its history.*

(Huey, 1908, p. 6)

Over the last 150 years, the story of literacy education is 'tangled up' with the story of contemporary mass schooling. Schooling can be thought of as a 10- to 12-year induction into how print- and digital-literate societies use communication systems. These systems include the communicational conventions those societies use to develop, store and disseminate their valued bodies of knowledge, the structures of texts generically purpose-built for various functions, and the lexical and grammatical configurations that embody those genres. They also relate to the interplays among words, graphics, pictures, mathematical algorithms and so on. The efforts of theoreticians, policy makers and educators to understand and act on these systems constitute the core of success in socially and institutionally inducting young people into literate life. Most of these processes have been omitted from many government-commissioned reviews of the research literature on literacy education. The gaze of much research has remained, too singly and for too long, on the appropriately phonating individual child, rather than on the actively literate and knowledgeable learner.

An important element of these omissions has been the attempt to extract literacy from the epistemological and ideological setting in which human communication operates, and which schooling calls for, no matter how deeply implicit that calling. It is perhaps the singular achievement of research on literacy, as it has recently been brought to bear on policy and practice in education, to have almost entirely purged itself of any interest in its own history, and in the history of its objects of study, as valid areas of inquiry. These are omissions that this review has tried to foreground in ways that might sufficiently intrigue novice researchers for them to question the silence.

Literacy education is material and relational work, always involving the institutional use of commercially produced materials. This work, in turn, produces, distributes and exchanges fluency, functionality, creativity and critique with print and digital materials. There are available histories of 'reading' (Cavallo, Chartier, & Cochrane, 2003; A. Luke, 1988; Taylor & Olson, 1995), 'writing' (Fischer, 2004), and 'literacy' (Ong, 1982; Vincent, 2000), along with multidisciplinary accounts that incorporate some historical and economic perspectives on the material word (Goody, 1987; Graff, 1995a). Their impact on the study of literacy education, as an area that bears on the practices of educators, teacher educators and educational policy makers, however, has been negligible.

Educators have been acculturated, especially in pre- and in-service professional development programs, to see little value in bringing historical understandings of literacy to bear on the everyday problems of the 'doing' of literacy education and the 'making' of policies about it. One of the aims of this review has been to address this omission by encouraging a historical

perspective, motivated by a belief that from the past we can learn lessons that can lead us forward. As Graff pointed out:

> *[t]he limits imposed by a neglect of the quietly present past mark their records as impressively as their achievements. Repetition is least among the costs of failing to learn from history; if only we might repeat the course! More seriously, ignorance of the circumstances in which crucial concepts, notions, arrangements, or expectations were fashioned, the means by which they have been maintained, and their consequences together limit severely if not contradict contemporary analysis, diagnosis, prescriptions.*

(Graff, 2001, p. 10)

The restricted breadth-of-field in the field of literacy research has been brought about partly by a fixation on method in the classroom, and, even within that narrow gaze, a fixation on the question of 'skill- versus meaning-based' approaches to method. That gaze may provide a way back, but not forward. For the most part, the mass media's attention on literacy education both reflects and reinforces such a restrictive perspective. In one media irruption on the teaching of beginning reading, for instance, Professor of Cognitive Science Max Coltheart and colleagues nominated the importance in the learning of reading process of phonemic awareness and alphabetic knowledge, and complained about insufficient attention to it in much current classroom practice in the early school years. In critiquing the damaging effects of 'whole language approaches', which Coltheart and others cited in the piece, took to ignore these aspects of learning, he commented:

> *The whole-language approach would be to say: 'We'll just have lots of pianos around the house and let the child listen to a lot of music and he'll [sic] be playing a lot of concertos.' It's not going to happen.*

(Coltheart, 2003, p. 26)

The implication is that teaching the child the connection between the names of the notes and the keys on the piano will, *of itself*, lead him [sic] to produce a lot of concertos. An alternative implication is that whatever additional resources may be needed to guide, inform and stimulate this outpouring of musical expertise and creativity (apart from, in the case of concertos, accompanying orchestras) will simply flow from a knowledge of the names of the notes. The problem of how to develop these additional and expanding resources through staged programs of instruction, practice and experiences with authentic practices is thus simply set aside. So major issues concerning the responsibilities of educators, including researchers, with respect to literacy learning are not even named, let alone explored or debated.

That these omissions have persisted in research on literacy education is partly because of the short timeframes in which much research is conducted. Studies selected for discussion in Section 3 of this review were chosen in part because they had made some attempt to document long-term consequences of literacy education interventions. But even so, the harvest is relatively small and the timeframes not particularly extensive. This matters because claims made about the significance of literacy education are usually claims about the long-term life chances, educability, trainability and general success and welfare of young people. They are also often claims about the benefits of effective literacy education for cultural creativity and cohesion, economic activity and the building of nationhood over time. In that light, the comparative rarity of longitudinal research is striking and raises questions about the adequacy of current models of funding educational research and, in particular, the research timeframes they typically make possible. Considering continuities and discontinuities across the course of emerging literacy, growing familiarity with discipline-specific literacy practices and growing engagement with civil and vocational literacy, it seems that serious longitudinal research would give some distinctive purchase to our understandings of literacy learning and to the applicability of those understandings to educational practice and policy.

They would also help literacy education researchers appreciate more fully the deep relationship that their object of interest has to the life trajectories of young people, to their engagement with powerful forms of knowledge, and to their sense that the world they inhabit is receptive to their interests and permeable to their actions. Theoretically and methodologically, these would be tonics to the field. They would provoke new policy horizons among government bureaucracies and regional jurisdictions, and open up new possibilities for classroom practice.

Conclusions and ways forward

The choices that researchers and teachers make have important consequences. In the social and human sciences, research is not just descriptive; it also *becomes* part of public activity; it is itself an intervention, setting norms for discussion, policy and practice. The patchy influence of research on educational practice, the scepticism of many teachers about the applicability and general value of educational research, and the often excessively ambitious claims about the value of certain generic literacy teaching strategies, all result from inadequately examined assumptions about the straightforward portability of research findings over time and place. From the research reviewed in earlier sections, and from the research that should have been found and was not, a number of general ways forward are here suggested. It will become clear that different kinds of research are needed, not just research on different *kinds* of topics.

Without a theoretical framework that has a view over time and at least some aspiration to 'sufficiency', as discussed in Section 1 in nominating the relevant resources needed to be literate, any debates about literacy boil down to special-interest pleading. Fluency with the particular GPC of English and understanding everyday texts are necessary parts of the development of the powerful literacy capabilities that contemporary schooling call for, and are necessary precursors to a generative process whereby individuals and collectives can actively and effectively participate in domestic, civil and vocational life. These aspects of GPC do not, however, add up to a sufficient platform for literacy activity in school and out of school life, as every English and Language syllabus in the country is at pains to point out.

Interrogating programs, syllabi, pedagogies and assessments for the completeness of their offerings leads to the discovery that, along with fluency and comprehension ('skills and meaning'), learners increasingly need to develop other resources. It is these resources that theories of literacy education have, in general, not yet come to terms with, specifically:

- How do readers and writers learn to integrate graphic and visual elements of texts with language elements in producing meanings greater than the sum of the semiotic parts? In particular, how do these integrations occur differently across the various knowledge disciplines?
- How do readers and writers learn to control the textual structures that characterise different textual genres? That is, how are the relations between form and function in language and text best taught and learned?
- How do learners come to appreciate, manage and exploit the ways in which literacy is used to shape public and private ideologies, to advance the interests of some groups over others by making those interests appear to be realities? How do teachers convey the basic knowledge that some textual strategies distract readers systematically from the insistent political, economic, cultural and environmental realities and contradictions they face?

No quick fixes

As Graff (1995b, 2001) has shown, and as this review has argued, there are serious lessons to be learned from an examination of the history of literacy education. Graff described the tendency of current educators and researchers to share the optimism of their counterparts in earlier times without inheriting a sense of the limits to change that the work of these professional ancestors has so often shown. Graff pointed out that 'present conceptions, arrangements, and practices of literacy, schooling and learning' are 'powerfully resistant to change, despite

signs to the contrary' (2001, p. 8), reminding us that unrealistic and eventually disappointing expectations concerning literacy's beneficial effects on individuals, collectives, cultures and economies abound in the historical literature. This is not so much about a lack of faith in the changeability of institutionalised social practices, but it again points to the need to take the longer empirical view of the effects of various approaches to literacy education in research programs that have a keen sense of the ideological, sociological and psychological factors that hold current practices in place.

Programmatic research

The long term

Effective interventions in literacy education need to be accomplished *over time*, from 'design' or 'proof of existence' studies, to a variety of small-scale activities, possibly sited in laboratories, toward multi-level quasi-experiments conducted in the field, towards full-scale, roll-out trials. This calls for patient programs that combine the efforts of researchers and professionals, and for strong and mature relationships between researchers, practitioners and policy makers.

Interventions can be evaluated too early or too late to allow a full appreciation of their potential scaled-up value, and some serious theoretical and empirical exploration of what constitutes 'mature practices' in the terms of the intervention needs to occur *prior* to intervening.

Throughout this review, the case has been put for the need for long-term studies of classroom activities in and around literacy teaching and learning. This is made even more urgent in light of the changing cultural and linguistic backgrounds of young people coming into schools, the changing things they need to do with their reading and writing practices, and the changing kinds of futures they face (Kress, 2003). All of these transformations impact on the work of literacy educators and point to the need for ongoing, on-site research.

On and between the sites of literacy education

Given that much of the literate activity done by school-aged children is conducted out of school, so continued consideration is needed of the relationships that researchers have shown to exist between literacy practices outside schooled settings on the one hand, and the particular psychological and institutional effects of 'schooling literacy' evident in current educational systems on the other (Freebody & Freiberg, 2001; Heath, 1983; C. Luke, 1989; Pahl & Rowsell, 2005; Street, 2005). This is an important body of research, partly because, unless researchers are confident that forms of literacy traditionally enshrined in schooling will be all that are required in the future by students currently in schools, they need to retain a breadth-of-field in their attention to literacy practices in many sites and with many technologies and in many task domains. Attention to this body of research is also critical for the ways in which teachers judge how well the classroom activities they organise simulate current and future literacy practices in and out of school.

This line of inquiry is strongly informed by historical considerations. An additional lesson from history outlined by Graff is that literacy development, for individuals and collectives, has taken multiple paths. In the past, people became effective literate participants in society through a variety of means. The central place occupied by literacy in institutionalised education has meant that schools' excessive reliance on age grading commits them to producing variations in the reading and writing achievement of young people and to standard curricula. Clearly these levelling, filtering and sorting functions of schooling can work directly against official rhetoric advocating equity. That we discuss literacy education as if we have forgotten that contradiction impacts on the lives of some students. It is a highly consequential instance of historical amnesia:

Missing from our common operational and legitimizing myths and legacies … is the informality and possibility of elementary and higher learning without the lock-step enforced march of age-grading and wholesale psychologies of human cognition and learning based on their simplistic presumptions … for a great many persons, traditional alphabetic literacy of reading and sometimes writing was acquired in the widest variety of informal, as well as formal circumstances, and at a wide range of chronological ages … at ages sometimes younger but far more commonly older than the limited span of childhood and early adolescence that came to be defined as the 'critical period'. Modernization of schooling into mass systems rested in part on the denial of previously common courses or paths.

(Graff, 2001, pp. 17–18)

Professional research

Documenting the baseline of current practice

Interventions should take place only *after* a clear and theoretically adequate description of the current state of literacy teaching and learning in target schools. The logic of intervention programs and policies has too often been of the following kind: there is research that indicates that students who are given the intervention of choice improve in their literacy. These students need improvement; therefore, these students must need the intervention of choice. Such 'reasoning' is illogical in that it ignores two of the clearest findings arising from research: first, that classroom activities and emphases differ; and second, that there are a variety of ways in which young learners can develop difficulties in reading and writing.

While targeted students' performance is at the heart of any evaluation of an intervention, it is not a sufficient base for judging the effects of that intervention. Issues such as the intervention's feasibility, propriety, accessibility and sustainability, its intent and its unintended consequences, all need to be documented prior to any definitive recommendations being made about how to proceed.

Relating the aims and actions of educators

Research functions best when it demonstrates the disparity between, on the one hand, the goals of individual teachers, schools, or jurisdictions (policy makers, school leaders, and the rest) and, on the other, the details of their practice (Heap, 1997). Researchers can help document how our practice falls short of or even countermands our intentions. The effects of research are less productive when the primary function is to cut 'underperforming' teachers, students, or target demographic groups out from the herd for naming, branding, or punishment. The punitive functions of research are resolutely counter-reformist; they entrench reactionary and counterproductive practices.

This suggestion concerning disparity helps researchers of literacy education keep in mind a sense of the breadth and intricacy of the field of conduct to which they aspire to contribute. This is important at a time when some of the pressures on them amount to little other than retreats from the complexities of contemporary life in schools and policy bureaucracies. Such pressures currently include the complexities that arise when researchers attempt to conduct programs of research with colleagues from neighbouring disciplines. The institutional conditions under which researchers work often militate against collaborative work, especially in the area of education and the social sciences, and some collective agitation aimed at improving that aspect of researchers' work needs to become an important part of 'the program'.

Coda

Adams began her summary of her review of the research on early years reading in school by pointing out that literacy education is 'the most politicised topic in the field of education' (Adams, 1990a, p. 1). Since she made that comment there has been no hint that her assessment needs revision. In fact, it could be argued that disputations over *literacy education*, in particular how it is done in the early years of schooling, have migrated well beyond the field of education. The *literacy education problem* is now a public celebrity, making regular appearances in the mass media:

> *As a student of literacy for over two decades, I cannot recall a time when literacy was not in a crisis.*

(Graff, 2001, p. 3)

But it is a villainous typecasting; literacy education rarely gets to play the role of a source of pride in the nation's education efforts (Freebody, 1997). This is regardless of high levels of performance on the part of Australian students in international literacy tests. Literacy education has become the scapegoat of choice for the economic, social, moral and intellectual fragilities and failings of our society, or at least its immediately impending fragilities and failings, or, at the very least, the fragilities and failings of some groups within the society. Some have argued (Apple, 1987) that the reason inadequate literacy education has such durability as an explanation for these shortfalls may lie partly in the way it temporarily allows us to retreat from the complexity that characterises the field of contemporary education to avoid debates about the economic, social, moral, environmental and intellectual consequences of the ways in which contemporary societies are organised (Freebody, 2005). Others have suggested that the reappearance of literacy as a media preoccupation is related to deeper aspects of current economic and cultural conditions (Welch & Freebody, 1993).

This review posits that the so-called 'literacy crisis' in the media relates to one of four conditions. These can be thought of as hypotheses that should be, individually and in combinations, critically applied to each new 'crisis' by researchers.

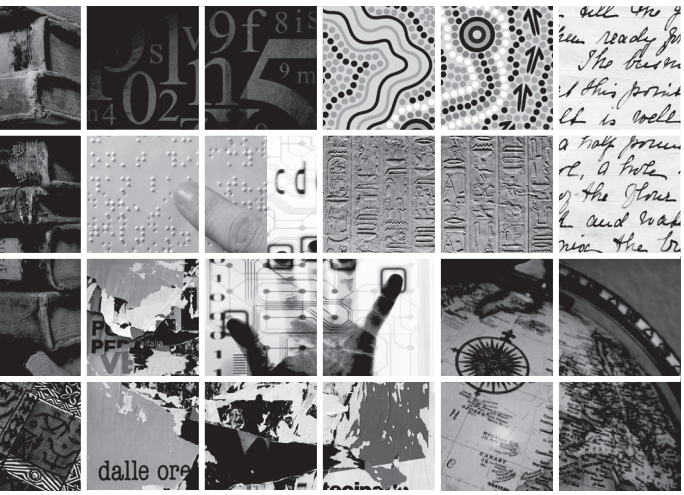
- There is a genuine decline in literacy capabilities, maybe because of factors to do with the changing demographics of either the students or the teaching force.
- The apparent decline is in fact because the demands on literate communicational capabilities has increased, in volume or complexity.
- There is no decline and no actual increase in demands, but there is credential inflation such that access to jobs has become (spuriously) dependent on increased school qualifications, maybe because of labour market sector redistributions.
- There is no decline, no increased demands, no credential inflation, but there is increased external economic and/or internal cultural and linguistic competition, destabilising the credibility of established relations of power and authority, and calling for an allocation of blame that moves the discourse outside economic and cultural relations.

All of these hypothetical explanations provide rich ground for programs of research in literacy education. Less effective are those research efforts that assume that only one of these sets of forces are operating at any given time. Just as the *concept* of literacy cannot be so readily corralled, so too the *problem of literacy education* should not be sheeted home to one simple explanation or one group of participants within the education enterprise.

This review has aimed to give a brief glimpse of the long, rich and boisterous tradition, from many areas within the social and human sciences, that is, the inheritance of scholars of literacy. It has also tried to convey the satisfaction – professional, intellectual, and even moral – that this field of study can offer. Literacy education is a research field overflowing with energy and contestation; but these arise not only out of the restlessness and fractiousness of its practitioners. They reflect as well a steadfast idea: that continuously working away at more effective and forward-looking understandings of literacy teaching is important for researchers, teachers, learners and the societies they inhabit.

When research on literacy education is conducted in an attitude of intellectual responsiveness, it is first and foremost an assertion of optimism in the face of complexity; it is an investment in the improvability of our efforts to confront new, changing demands and old, stubborn obstacles and inequities; it engages us deeply in questions about what kind of society we wish to live in, the capabilities, dispositions and moral projects that such a society will value. Those values must include fluency, accuracy and effectiveness. But the future calls for more than that; it calls for scepticism, individual and collective agency, a restive, independent intellectuality, and a feisty sociability. As in the Bible, 'with all your getting get understanding' (Proverbs, 4:7), but as W.C. Fields said when he was discovered reading the Bible, 'I'm looking for loopholes'.

There have, it seems, been conceptual and methodological loopholes that have allowed simple theories, simple research methods, and simple answers to be applied to the complex questions we must try to answer about literacy education for the future. Researchers' comfortable misreadings of these loopholes as methodological or institutional facts-of-life have sustained the interests of some groups, but certainly not marginal groups such as Indigenous or economically disadvantaged students in Australian schools. The most general conclusion that can be drawn from any review of the research on literacy education is that now is a good time for those loopholes to be stitched up, firmly and permanently.



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Peter Freebody is Professorial Research Fellow in the Faculty of Education and Social Work at The University of Sydney. His work in the field of literacy began with his doctorate at the Center for the Study of Reading at the University of Illinois, and his ongoing research, teaching and writing interests in literacy education has focussed on classroom interaction, disadvantage and education, and research methodology. He has served on numerous government policy groups.

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